197

7/2

222

GOVERNMENT OF TAMILNADU

WORKING PLAN

FOR

THE TIRUNELVELI SOUTH FOREST DIVISION

1976-77 to 1985-86

By

Thiru Y. S. KADAKSHAMANI, I. F. S.

Working Plan Officer

Under the Direction of
THE CHIEF CONSERVATOR OF FORESTS
MADRAS-600 006

213/86

26 செப் 1986

PREFACE

The last Working Plan for the Tirunelveli South Division was prepared by Thiru S. A. Rahmatullah and it was in force from 1st April 1959. Normally it should have been revised after ten years but due to various reasons the revision was not taken up in time, So the prescriptions of the Plan were continued to be followed with suitable modifications. The revision of the Plan was taken up on 1st August 1973 and completed on 31st December 1975.

The writer was assisted by a team of two Rangers and six Foresters in field for preparation of Plan, of whom Thiru A. R. Duraikannu, Forester was outstanding.

The writer wishes to place on record his indebtedness and thanks to various persons who rendered help and advice in the preparation of this Plan.

Y. S. KADAKSHAMANI,
Working Plan Officer,
Madurai.

222

Forest Central Library, Chennai
222

TABLE OF CONTENTS

PART I.

Summary of facts on which the proposals are based.

SECTIONS PAGES

CHAPTER I—THE TRACT DEALT WITH. (1—21)

1 Name and situation .. 1

2 Configuration of the ground .. 1

3 Geology, Rock and Soil .. 1

4 Climate and Rainfull .. 2

5 Water Supply .. 2

6 Distribution and area .. 2

7 Boundaries .. 3

8 Legal Position .. 3

CHAPTER II—DESCRIPTION OF THE FORESTS. (21—32)

1 Composition and condition of the crop .. 21

2 Injuries to which the crop is liable .. 27

3 Short Note on Wild Life .. 32

CHAPTER III—UTILISATION OF THE PRODUCE. (33—41)

1 Agricultural customs and wants of the population .. 37

2 Markets and marketable products .. 38

3 Lines of Export .. 38

4 Methods of exploitation and cost .. 39—40

5 Past and current prices .. 41—49

CHAPTER IV—STAFF AND LABOUR SUPPLY.

1 Staff .. 50—55

2 Labour Supply .. 56

CHAPTER V—PAST SYSTEM OF MANEGEMENT

1 General history of the Forest .. 56—61

2 Early history of Singampatti Forest .. 62

3 History of Ex-Ettayapuram Estate Forest .. 64

4 History of the Forest in Kanniyakumari District .. 65—66

5 Past system of management and their results .. 67—68

6 Plantations raised prior to Thiru Rahmatullahs Plan .. 69—75

7 Thiru Rahmatullahs Plan proposals, implementation and results .. 76—85

8 Fire protection .. 86

9 Special works of improvement undertaken .. 86

CHAPTER VI-PAST SYSTEM OF MANAGEMENT.

SECTIONS. PAGES.

10 Past revenue and expenditure .. .. (93—95)

CHAPTER VII—STATISTICS OF GROWTH AND YIELD.

1 Forest Resources Survey 93

2 Statistics relating to growth of Teak 93

3 Statistics relating to growth of Softwood 94

4 Local volume Table 95

THE WORKING PLAN FOR TIRUNELVELI SOUTH FOREST DIVISION.

PART I.

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED.

CHAPTER-I

THE TRACT DEALT WITH

SECTION 1.

NAME AND SITUATION.

1. *General.*—The Working Plan covers the whole of Tirunelveli South Forest Division as constituted in G.O. No. 2987 Food and Agriculture, dated 21st December 1956. It extends over the whole of Kanyakumari district and major portion of Tirunelveli district, comprising Nanguneri, Tirunelveli, Tiruchendur, Koilpatti and part of Ambasamudram taluks. (A part of Singampatti forest on the left flank of Manimuthar river lying in Ambasamudram Range of Tirunelveli North Division dealt with in the previous plan is omitted from this plan).

2. *Location.*—The tract dealt with lies between North Latitudes 8°5' and 9°30' and East Longtitudes 77°12' and 78°2'.

SECTION 2.

CONFIGURATION OF THE GROUND

3. *Western ghats.*—The western ghats which runs north-south form one continuous block along the western boundary of the division. The entire area is distinctly hilly and in many places very steep and rugged. The higher reaches are steep with a few prominent peaks. The highest point is 1829.4 m (6002 feet), above M.S.L. at the trijunction of Mahendragiri, Kalakad and Veerapuli Reserve Forests. Other important Peaks are Mahendragiri (1,654.2 m) in Mahendragiri Reserve Forests ; Mottaichi Peak (1590.4 m) and Varajattumudi (1426.2 m) in Klamalai Reserve Forests ; Mukkuttukal (1,363.4 m) at the trijunction of Kalakad, Singampatti and Vee apuli Reserve Forests ; the Golden Rock (1,484.7 m) and Vanamuttimalai in Klamalai Reserve Forests and another Vanamuttimalai (1,592.3 m) in Kalakad Reserve. The valleys and flat lands between the spurs are accessible and exploitable and contain valuable forests. The major portion of the forests of Tirunelveli South Division lieshare The eastern slope of the ghat which is in rain shadow region shows marked variation in growth and contains less valuable forests.

4. *Plain Forests.*—The plain forests lie mostly in Tirunelveli district and are seen around a few isolated hillocks jutting up here and there.

5. *Sand dunes.*—There are two large blocks of sand dune forests in Tirunelveli district. The origin of these red sand terrain can be attributed to heavy and continuou gales which prevail from May to September during the South-West monsoon. The sand from the plains of Nanguneri taluk by stages get deposited as Theri because of the force of the westerly winds and the easterly sea breeze from the Bay of Bengal which encounter these gales. The red sand deposited in the Theri Reserve move from place to place in the windy months. The bigger block Kudiraimozhi Teri Reserve has been fairly clothed with vegetation because of concentrated efforts over many decades. The other block Sathankulam There recently taken over is completely barren.

6. *Drainage.*—The whole area is traversed by a net work of rivers which feed the reservoirs and numerou tanks which form the basis for agriculture in this part of the country. The main rivers which are of importance for irrigation are, the Thambaraparani, Manimuthar, Varattar, Kusangiliar, Pachiar, Nambiar, Kodayar, Masipattiar and the Chittar. The general direction of the rivers is easterly in Tirunelveli district and South-Westerly in Kanyakumari district.

7. *Reservoir Projects.*—The Upper Kodayar Reservoir impounding the Kodayar river waters is used for generation of electricity and later this water gets stored in Perunchani and used for irrigation. Other irrigational project reservoirs are Manimuthar, Perunchani, Mukkudal, etc. These reservoirs dry up during summer.

SECTION 3

GEOLOGY, ROCK AND SOIL

8. This geological formations in Tirunelveli district are for the most part of Archaean age represented by gneisses and granites. Along the coastal tracts a few thin sedimentary beds of recent and sub recent age fringe the coast for widths of 6 to 12 kms. The shore line is covered in the south with stretches of huge sand dunes termed "teris..' Similarly the Kanyakumari region is represented for the major part by the Archaen gneissh covered in the coastal regions by large tracts of reddeis soils of considerable thickness.

The Archaean rocks are represented by a variety of rock types of widely different mineralogical composition. They have been intruded profusely by later rocks and altered to such a degree that a differentiation between the individual members is often difficult. The rocks represented are of deep seated metamorphic origin and have resulted due to complex fold movements that have affected the western ghats in their formation. The rocks are of such antiquity that they may be termed as the basement complex, on which other younger sedimentary rocks have been laid down.

The Archaean formations are represented by quarties, Crystalline limestone,garnetiferous gneisses, charnokites ganites and pegmatiies. The trend of rock types conforms to the regional trend of the hill ranges.

Many mineral deposits of economic value have been recorded in the Tirunelveli-Kanyakumari region. The most note-worthy among them are the limestones, gypsum, beach sands containing monazite and limenite, graphite, clay and mica. A number of mineral based industries utilising these minerals have been established in the above region. In addition they are being transported to other. regions of the country and also explored to foreign countries

9. *Soils.*—There are many varieties of soil met with in this division. In Tirunelveli Range, partioularly in parts of Gangaikondan reserves and parts of ex-zamin forests of Ettayapura a high percentage of black soil or regular is noticed. In other parts like Vallanad Wolf hill and Melapattam reserves, the soil consists of red ferrugeneous sandy loam of very little depth, with mixture of loose boulders occurring almost everywhere. In Kanyakumari the soil is mostly loamy and assumes sandy or clayey character depending on ths accumulations of wash on the surface. The depth of the soils very widely. In valleys and low lying areas whdre the wash from the surrounding hills accumulate, the soil is fairly deep and such places often support good vegetation. On the hill slopes and elevated grounds which are subjeet to heavy wash, the soil has a chraracteristic yellow or reddish yellow colour. On the tops and higher slopes of hills where the wash is excessive, the gound is rocky and soil shllow and hard.

10. *Aeolian formation.*—Blown sands play a very importnt part in the plains of this division. Heavy and continuous gales prevail from May to September during south-west monsoon. By these fierce winds, the dry surface of the broad belt of red loam is swept clean and vast clouds of red dust are carried eastward to the coast and there meeting the fresh sea-breezes are precipitated giving rie of the red sand hills or teris. These sand his comprise the whole of Kudiraimozhi Teri Reserve. The teris have been deposited upon and around a mass of impermeabler marine lime stone elected to varying heights above sea-level. These teris have been causing damages to field gardens and even houses, by their advance from time to, time.

SECTION 4

CLIMATE AND RAIN FALL.

11. *Climate.*—The climate of Tirunelveli district except in hills is generally hot, the maximum and minimum temperature in the plains being 40° C and 25° C respectively. In Kanyakumari district, due to proximity to the sea the atmoshere is humin aod cooler winds during the summer and well distributed showers throughout the year make the climate mild.

12. *Monsoons n Kanyakumari distrtct*—The Southes-west monsoon brings the major part of the rainfall. It usually sets in by the first week of June. The heaviest preciptation is in June and July. A few showers of North-east monsoon also are received in Kanyakumari district. In Tirunelvel district the North-east monsoon alone has to be rockoned, which starts from October and peters out by December, In the eastern slopes of western ghats a few showers of South-west monsoon are received. Thus, for regeneration operations South-west monsoon helps Kanyakumari district and North-east monsoon helps Tirulveli district.

13. *Raiufall*—The annual rainfall in millimetres at various stations in the division is given in para 37.

As will be seen in the statement the rainfall variou widely from 2,200 mm. at Thadikarankonam to 600 mm in Sathankulam though the elevation is same, the impac of South-west monsoon causing the difference.

14. *Winds.*—During south-west monsoon, the wind blows constantly from westerly or South-westerly direction. These winds are so fierce that they have a desicoating, destructive effect on the plains of Tirunelveli district since they shed the water particles by the time they cross the western ghats. This wind is the major cause for wind erosion and formation of theiri in certain parts of Tirunelveli district. It increases the fire hazard by drying up the grass and leaves in the forests which eventually become susceptible to fire in the months of February and March.

15. *Health.*—The plains are healthy and the ghat forests are on the whole healthy for the major part of the year. Epidemics like Malaria and Small Pox are no reported in recent years.

SECTION 5.

WATER SUPPLY.

16. In general water scarcity is experienced during dry months throughout the division as the rivers and resservoirs dry up during the period. Regarding the supply of water for the subordinates living in Government quarters mostly wells form the source of supply. Regarng their present condition and their requirement of improvement, suggestion are given in para 634.

SECTION 6

DISTRIBUTION AND AREA.

17. The Tirunelveli South Forest Division is divided into 5 territorial ranges i.e., Tirunelveli, Nanguneri, Boothapandy Azhagiapandiapuram and Kulasekaram Ranges. A complete list of all the forests in this division their extent and legal position is given in paragraph 38. The total area of each Range is given below :—

Serial number and Name of Range. (1)	*Reserved fores in sq, km.* (2)	*Ex-zamin fores in sq. km.* (3)	*Reserved land in sq. km.* (4)	*Pro posed reserved in sq. km.* (5)	*Unreserves in sq. km. sq. km.* (6)	*Total* (7)
1 Tirunelveli	95.95	24.60	8.99	..	..	129.54
2 Nanguneri	250.66	116.28	..	..	..	366.94
3 Azhagiapandiapuram	99 50	..	..	25.00	..	124.50
4 Kulasekaram	212.75	..	..	..	1.55	214.28
5 Boothapandy	92.83	..	0.19	14.84	..	107.86
	751.69	140.88		39.84	1.53	943.17

The cannal and river fringe plantations raised along the Thambaraparani and its canals as on 1st January 1974 cove an extent of 464.70 ha. [excluding 50.40 ha. handed over to P.W.D.) and are under the control of Tirunleveli Range.

All the village forest plantations in the division raised in poramboke and tank beds are being managed by Farm Forestry Range Officer (extent—2387.88 ha. on 1st January 1974.)

SECTION 7.

STATE BOUNDARIES.

18. All the reserved forests in Tirunelveli District includ ing Ex– Panchayat Forests have been properly demaracied and have maps, but in Kanyakumari district, the boundaries are not clearly demarcated on the ground and worse is the case of enclusures which merge with the forests around and make enocrachments easily possible and not detectable in the absence of records and maps. So, encroachments are common. The Kani settlements inside the forests are not demarcated and contained with the result they have increased in number and extent. The state boundary between the Kanyakumari district and Kerala State boundary between Klamalai reserve needs to be properly demarcated and kept clear.

The boundary descriptions notified under Section 18o the Forest Act of Ex/Travancore Cochin State which corresponds the Section 16 of the Tamil Nadu Forest Act are so vaguely/described that encroachments cannot be detected easily. No surveyed sketches for the reserved forests of Kanyakumari district are available. The exterior boundaries are not conspiciously demarcated on the ground. The demarcation had been done with survey stones and in certain places with cairns. Often these cairrns or survey stones are missing and render checking the boundary difficult and almost impossible. Similar'y the boundaries of private estate and plantations which are inside the Reserved forests have not been well defined either on the ground or in the notifications. Sincewe have no sureved sketch for the boundaries of Reserved forests, we have to depend on the r surv y sketch in respect of private lands adjoining the forests and inside the forest.

In G.O. Ms. No. 1133, Agriculture Department dated 7th April 1971, Government hav accepted the suggestions of the Assistant Director of Survey and Land Records, Nagercoil, to relay and demarcate the boundaries between the Reserved Forest areas and private holdings in Kanyakumari District in order to assess the encroachments by them inside the Reserved Forests. The Government have also issued suitable instructions to the Assistant Director of Survey Nagercoil regarding this. In the meanwhile, the Government also asked the Chief Conservator of Forests, to arrange for the erection of temporary or permanent forest cairns on the boundaries, after the boundaries are relaid and demarcated. Accordingly the Assistant Director of Survey was said to have carried out the survey work and also supplied the sketches for the encroachments noticed.

But unfortunately action was not taken close on the heels to erect cairns and evict encroachments except in a few cases, so the status quo continues or encroachments are on the increase.

Now it has been proposed by the Chief Conservator of Forests to have the survey redone and plant cairnssimultaneously with the help of additional staff (Chief Conservator's No. 3793-69 G/2, dated 7th August 1974). This is utmost important. Maintenance of boundaries in the case of forests in Tirunelveli District also needs attention.

19. *Encroachments*—Encroachments are a common feature in Kanyakumari forests which could not be checked in the absence of maps and detailed notifications. Wherever action has been taken no effective eviction has been done because of court proceedings.

SECTION 8

LEGAL POSITION

20. *Reserved Forests.*—The Reserved Forests are notified under Section 16 of Madras Forest Act or under Section 18 of Travancore Forest Act. The admitted rights and concessions are shown in their respective Section 16 or 18 Notification as the case may be.

21. *Ex-Zamin Forests.*—The ex-Zamin Forests have not been constituted into reserved forest. In the case of these forests Section 4 Notifications have to be issued.

22. *Asambu Proposed Reserve.*—A preliminary Notification under Section 4 of the Travancore-Cochin Regulation II of 1068 (M.E.) was published in 1908 proposing the caea for reservation by the Forest Department. According to this Notification the Dewan Peshkar of Padmanabhapuram Division was appointed to enquire into the claimt of the private parties and to dispose them in accordancs with the rules. Another Notification under Section 6 of the above Act calling for the application if any regarding the claims over the lands was published by the then Forest Settlement Officer. All the claims which were putforth before him were disposed of except few which were pending in the High Court. The Government in their Memo. No. 47134/D II/67-5 Agriculture Department dated 23rd September 1967 issued orders notifing the appointment of a Revenue Dicisional Officer, Padmanabhapuram as Forest Settlement Officer. In B. P. No. 303 (0)/73, dated 27th March 1973, the Board have intimated that the Revenue Divisional Officer, Padmanabhapuram himsee may attend to the settlement workin the Asambur Reserved Forest with the help of the District Forest Officer. As a detailed fresh enquiry is to be conducted, the Chief Conservator of Forests was requested to appoint a full time Forest Settlement Officer in the cadre of Deputy Collector, through the Collector, Kanyakumari District. The Chief Conservator of Forests and the Collector have addressed the Government in this regard and orders of the Government are awaited for appointment of a Forest Settlement Officers.

23. *Reserved Lands.*—The Reserved Lands are at the moment notified under Section 26 of Madras Forest Act.

24. *Unreserve.*—Thodalikadu Unreserve has not been notified under any Section and sreps have to be taken up to constitute it into Reserved Forest.

25. *Village Forests and Canal Plantations.*—These plantations are raised in lands at the disposal of Government and in the absence of notification under any of the Section of the Forest Act or District Gazette, the protection of these areas is at the mercy of the Villages around. Better protection can be enforced if notified under Section 26 of Madras Forset Act.

26. *Kani Settlements* :—There were 23 Kani Settlements in the division in 1958 and the number hasincreased to 47 now and the total extent is 1210 .76 ha. The Kani Settlements have been surveyed and the extent of each Kani Settlement is known. However in the absence of permanent demarcation, enlargement of these possessions take place (See Chapter under Miscellaneous Regulations).

27. *Tree Patta*:—A peculiar survival is the existence of Tree Pattas issued in Pre/Settlement days to Pattadars for the usefructs of Palmyrah and fruit bearing trees grownig in the Reserved Forest. Patta palmyrahs exits in Kudirai mozhi Teri Reserved Forest and Kalakad Reserved Forest The question of extinguishing these rights in Kudirai mozhi Teri has been engaging the attention of the Government. One of the conditions under which this right was recognised is that no grant, sale, lease, mortgage or other alienation of the usufurct be made without the sanction of the Government under section 19 of the Forest Act. There is ample evidence to show that this condition has been violated by many of the pattadars. The nature of the right admitted was such that it should extinguish itself with the death of the concerned trees. But in practice, it was not possible to regulate the claim, owing to the presence of numerous Government trees. When a patta tree dies, the pattadar unscrupulously puts his mark on the nearest Government tree and claims it as his patta tree, as there is no identification mark in Government tree. Thus many of the Government trees are claimed by pattadars. Sri V. S. Krishnaswamy, as Working Plan Officer, made the following two suggestions in 1944 to slove this difficulty.

(i) To make fresh enumeration of all patta trees based on the present claims fixing the situation of each tree in a sketch, as in the case of sandalwood enumeration so as to enable the regulation of future claims correctly.

(ii) To propose to the Government to issue declaration that all private rights over the palmyrah trees in the reserve will be extinguished after a specified period.

The Government Pleader, who was consulted on the second suggestion, opined that this will not be accepted legally as it involves forfeiture of private rights without paying compensation. So he suggested to acquire the present private rights by paying compensation. For this purpose a Special Deputy Collector was appointed in (G.O.Ms. No. 348, Agriculture, dated 8th February 1954 to go into the question in detail and find out the names of persons entitled to compensation and to settle the question of extinguishing the right of pattadars over patta palmyrah trees. After enquiring into the claims and identifiying the patta trees, the Special Deputy Collector reported the existence of the following patta trees:

Name of the village.	*Number of trees.*		*Number of present enjoyers or claimants.*
	Palmyrah.	*Mango.*	
(1)	(2)	(3)	(4)
Kachinavilai ..	2,452	2	128
Nalumavadi ..	2.959	15	125
Veeramanickam	2,548	1	104
Kanam ..	2,229	..	144
	10,188	18	501

It is to be noted that at the time of Forest Settlement no patta rights was admitted in the village of Veeramanickam whereas the Special Deputuy Collector mentions 2548 trees.

The then Collector of Tirunelveli had suggested the following 5 methods for extinguishing the rights over patta palmyrah trees.

Payment of cash compensation under the Land Acquisition Act (vide G.O. No. 1073, Revenue, dated 28th Many 1919).

Grant of land in exchange under Land Acquisition Act vide (G.O.Ms. No.2737, Revenue, dated 20th July 1918).

Outright disreservation of the forest area containing the trees and handing over the trees to the Revenue Department.

To involve the provision of Section 19 of the Tamil Nadu Forest Act and declare null and void, the rights of purchasers and other transferees, as such transfer of rights is opposed to Section 19 of the Act; and

To declare that after a period of certain years (based on the normal length of life of a palymrah tree and taking into account the period that has elapsed since the year of settlement viz., 1892), private rights to palymrah trees in the reserve will be extinguished automatically.

The Chief Conservator of Forests did not recommend the suggestions 3, 4 and 5 and the Board of Revenue agreed with this. Suggestions 1 and 2 were under consideration by the Government.

After protected correspondence on this subject, the Board of Revenue has now suggested to the Government to acquire the rights of the pattadars over the palmyrah trees by paying compensation [B.P. Form 1488 (9), dated 31—12—1973].

In Kalakad Reserved Forest also Under Section 16 of Notification No. 533, dated 27th November 1890, certain patta rights were admitted. The extent to which these rights are being enjoyed are given below :

Name of village.	*Number of trees.*
Idayankulam	382 palmyrahs
Malayadipudur	410 palmyrahs and 23 Mangos.

28. *Royalties.*—Under Section 52 (i) of the Travancore-Cochin Forest Act of 1951 trees of the follcwing species that is to say teak, balckwood (Dalbergia latifolia) and sandalwood (Santalam album) along with ivory and teeth of wild elephants whether grown or found on Government land or private property, are royalties; and no trade shall be carried out in them unless they have been dully obtained from the Government. They cannot be cut by the owners of the property on which they stand without the specific permission of the Forest Department and in which case the royalty fees have to be collected from them But when such trees are removed by the Government the owner of the land is entitled to certain payment known as 'Kudivilla' which is a part of the net sale proceeds of the royalties. In 1927 in the Sri Mulam Popular

Assembly representations were made regarding the rights over the royal trees standing in private lands. Delay and hardship in settling the Kudivilla Claims were brought to the notice of Government and it was urged that holders of private lands should be allowed the full rights over the royalties, as in the neighbouring Madras State. A committee was formed to examine and discuse the question on all its bearings. After inspection of localities and discussions, the committee opined that both the State and the people would be benefited if the monopoly on royalties was abolished within ten years by which time the Forest Department should put forth its best endeavour to extract all royal standing on private lands and leave the people whatever was left behind free from all restrictions. Accordingly the tate was divided into three tracts as shown below :—

Tract I—West of the main southern road from Trivandrum to Nagercoil in Aramboli.

Tract II—West of the road passing from Nagercoil to Thuckalai, Meycode, Kulasekaram, Kaliel and Nedumangad.

Tract III—All lands east of Tract II.

Further to expedite matters and save private owners from considerable delay and loss in getting kudivilla amount fixed rates of Kudivilla were also fixed and given effect to from 1931 (14th September. 1107, Malayalaeara) As the two years allowed for the abolition of royalties in Tract I expired by the end of 1108 Malayalamera(1933) a proclamation was publised in 1936 abolishing this monopoly in Tract I. Similarly the monopoly over-Tract II was also lifted after a stipulated time. And at the time of States Reorganisation on 1st November 1956, the monopoly continued in Tract III and this right in Tract III was to have extinguished. The right in Tract III was to have extinguished on 1st January 1957, after extracting all royalties standing on private lands. But the owners adopted dilatory tactics with the object of putting off their extraction up to this date, so that they may have these trees, once the royalty rights are lifted. Now the monopoly right over the royal trees has been made permanent. The Tract III over which this right is exercisable is the area situated east of the road from Nagercoil to Thuckalai, Thuckalai to Meycode thence to Kulasekaram, Kaliel and thence to Nedumangad up to the limit to Vilavancode Taluk in Kanyakumari District. The extraction of Royal trees is yet to be completed and the High Court has stayed extraction in S. No. 2693/2 and 2694/2 of Darisanamcope village and the case is now in Supreme Court.

Coffee land registry and Government right over certain trees in Kanyakkmari.

29. It is necessary to describe in detail the coffee lands and the rights of Government over the trees within these lands. There are two broad categories of land under private occupation, and these are Pandarapattam land and others. Pandarapattam land secures obsolute rights to the owners of the land and on the trees except royalties. But the term 'Pandarapattam land' refers more to the tenure of the land as such rather than the nature of the holding by an individual. A Pandarapattam land if it had been granted for any plantation purpose, was granted, often under the waste land rules (given in Appendix V). It is to these terms and conditions of grant that one should refer when deciding whether a holding is held with full absolute rights or not. There are several estates in Kanyakumari held under waste land rules and coffee land rules. The estate owners have been representing that their estates were Pandarapattam lands and not coffee land grants. This claim is advanced so that they may get the timber of all reserved and unreserved trees for themselves without payment of any seigniorage fee. How this change from the coffee land estate to Pandarapattam took place and whether this is authorised or whether it was merely a fraud can be decided with reference to the original revenue records from the time of grant and with reference to the nature of assessment that was paid by these owners. A correlation statement of the nature of holding was prepared for these esates and it was noticed that the rate of assesment for all these lands was Re. 1 prior to the introduction of the basic tax, that the lands which are now claimed as Pandarapattam are not really so but were only coffee land grants and as such the right of Government in these estates lands to royalties and reserved trees is secured under the title deeds given under coffee land or waste land rules.

Another point to be scrutinised in connection with these estates is the nature of the trees. There are three categories of trees in the area (1) Unreserved Trees ; (2) Reserved Trees and (3) Royalty Trees. In Pandarapattam tenure the Unreserved Trees, Reserved Trees and absolutely owned by the holder of the land. For the royalty trees removed from his land he is entitled to 'Kudivilla'. Under the coffee land rules the holder of the land may cut the trees for his own use, but if he wants to remove any of the reserved trees (the reserved trees are listed under the Timber Transit Rules in Tranvancore—Cochin Government Order No. Roc. 5438/29, Development, dated 5th April 1933) the estate owner has to pay Kuttikanam. By an amendment to rule 26 of the coffee land rules issued in November 1913 Kuttikanam was equated with the seigniorage rate. This applied to the cutting of all or any of the trees in the state area. For removal of royalty trees from lands granted under coffee land rules Kudivilla has not to be redd to the holder.

The following statement gives a list of all coffee grants in Thovala and Kalkulam Taluks.

Name of village. (1)	*Survey numbers.* (2)	*Name of estate.* (3)	*Name of owner.* (4)
Ponmana	3064, 3065	Balamore	Dr. M. Mathias
„	3068	Myloni	Do.
„	3041, 3042, 3043 and 3045	Seafield	South Travancore Plantation Company, Limited.
„	3046, 3048, 3050, 3051 and 3053	Glenmore	Do.
„	3054	Gorimony	Do.
„	3057	Telford	Do.
Azhagiapandiapuram	2903	Blackrock	Rev. John Case
„	2910, 2911/1, 2911/2, 2905 and 2906.	Olivers	Do.
„	2902/2 and 2902/3	Do.	C. N. Sompson
„	2913, 2914/1,2,3 and 2915/1	Mahendragiri	Mathew Abraham
„	2916/1 and 2917/2	Glen Morrison	Do.
„	2918/1,2 and 2919	Woodland	
„	2899 and 2901	Upper Victoria	D.C. Joseph
„	2890 and 2891	Lower Victoria	G. Gnanayas
„	2660/2	Kunnimuthucholai	R.C. Tuticorin
„	2660/3, 2645, 2647/1, 3 and 2660/1.	Do.	Arulappa Pillai
„	2648, 2654/2 and 2656	....	K. Arulswami
„	2649/2, 2658, 2657/2, 3, 2651 and 2250.	....	M. David
„	2644/1, 2662 and 2650/3, 4, 5	....	S.S. Somasundaram Pillai
„	2676, 2674, 2673, 2675, 2681, 2680 and 2678.	....	Do.
„	2683 and 2685	....	A. Yacob Sahib
„	2668 and 2666	Kadampalam	Syed Valli
„	2669	Do.	Y. S. Karim
„	2669/1	Do.	S. Paul Nadar
„	2671/1 and 2664	Do.	P. Karukkumuthu.

Long term leases.

30. Land lease in Kudiraimozhi Teri Reserved Forest in Tirunelveli Range—Area 50 acres for a period of 50 year from 1st October 1945 has been granted to Thiru G. Kalyanasundara Nadar, in G.O. No. 2169, Revenue, dated 8th September 1943 communicated in Chief Conservator's Ref. No. 304/43, dated 3rd October 1943 to raise food and vegetable crops for the duration of the war and thereafter for raising of cashew and other fruit bearing trees and fuel trees such as Odai, Casuarina, etc.

	RS.
Annual rental	56.25
Land and educational cess	17.60

Land lease in Kudiraimozhi Teri Reserved Forest in Tirunelveli Range—Area 50 acres period of lease 50 years, from 27th June 1951. Granted to Thiru G. Maharaja Nadar in G.O. Ms. No. 1682, Revenue Department, dated 29th March 1949 communicated in Chief Conservator's No. 6282/49C4, dated 22nd April 1949. To raise cashew nuts and other fruit bearing trees and fuel trees such as Odai, Casuarina, etc.

	RS.
Annual rental	56.25
Land and educational cess	17.60

31. Land lease in Singampatti Forests—Document No. 373-1929. An area of 8,373.57 acres has been granted to Messrs Bombay Burma Trading Corporation Limited. Singampatti by the ex-land holder of the estate for a period of 99 years from 15th January 1929, for the purpose, of cultivation of coffee, tea, cocoa, cinchona, cardamomy pepper, rubber and other products except timber, consequent on the abolition of Zamindars, the right already granted to the Bombay Burma Trading Corporation has been approved by the Board of Revenue (S.E.), Madras in S.E.B. 9041-52, dated 13th August 1958.

The annual rental is Rs. 14,235.10 (rate Rs. 1.75 per acre per annum for 95 per cent of the area and Re. 0.75 per acre per annum for 5 per cent of the area).

The Government Memorandran No. 99306/FR-II/72-14, Agriculture, dated 29th June 1973, communicated in Chief Conservator's Ref. No. 24230-72/I-H3, dated 3rd July 1973, the Government have permitted Messrs. Bombay Burma Trading Corporation Limited to sell the timber, firewood, etc., cut from the leased areas in the Singampatti forests in Tirunelveli district to any party by stipulating certain conditions, and necessary amendment to the original deed has also been proposed.

32. Messrs. India Cements, Thalyayuth : In G.O. Ms. No. 3231, dated 28th July 1952, Messrs. India Cements Limited, Thalyayuthu has been permitted to quarry in S.W. No. 1 and 2 in Thalyayuthu village over an area of 1,445.79 acres in TirunelveliRange for the manufacture of cement.

Subsequently, the Government in their order Ms. No. 3086 Industries, Labour and Housing dated 26th September 1967 sanctioned the grant to the India Cements Limited for a mining lease for limest one and Kanseer for a period of 20 years over an extent of 1,445.79 acres in the said village. The lease deed was executed by the General Manager, India Cenments Limited and Collector, Tirunelveli, on 27th February 1969.

	RS.
Surface rent	361.50
Advance deed rent for a year	14,457.90

Royalty at Rs. 1.25 per tonne for more than 45 per cent purity and Royalty at Re. 0.75 per tonne for less than 45 per cent purity.

The Director of Industries and Commerce, Mining and Geology Branch, Madras, has stated that "the limestone occuring in Thalayuthu Reserved Forest would confirm to the superior grade with 45 per cent Ca0 or more. Therefore Rs. 1.25 per tonne has to be levied as royalty from the firm" (vide 11253-B3-72, dated 10th October 1972).

33. *Eta reeds.*—Supply to the Sun Paper Mills Limited,. Cheranmahadevi : In Government Memo No. 53127-D/II/69/II Agriculture Department, dated 29th May 1970 communicated in Chief Conservator's No. D2/8221/69, dated 30th May 1970, the right to collect and remove the Eta reeds in whole of Tirunelveli South Division has been leased out to the Sun Paper Mills, Limited, Cheranmahadevi for a period of 12 years from 1st April 1970 to 31st March 1981 stipulating certain conditions.

Rate.—Rs. 6.00 per tonne of Eta reeds for the first 3 years subject to the conditions that the quantity removed 3 years does not exceed 60,000 tonnes. For any quantity above this limit the enhanced rate of Rs. 12 per tonne is to be collected.

The revision of rate fell due on 1st April 1973 and the District Forest Officer has submitted proposals fixing a rate of Rs. 25 per tonne (District Forest Officer's No. 15858/71,L, dated 8th June 1974).

34. *Chip-Board.*—Supply to the Madras Chip-Boards Limited, Rajapalayam. The Madras Chip Boards Limited Rajapalayam is permitted to fell and remove softwood trees from Veerapuli Reserve Forest of Kulasekaram Range under selection system at the rate of Rs. 5 per cum. at site for period of ten years stipulating certain conditions vide G.O. Ms. No. 3411, Agriculture, dated 31st December 1970 communicated in Chief Conservator's No. D2/37/71, dated 6th January 1971.

35. *Electricity Board.*—An area of about 406.53 acres was leased out to the Electricity Board for Kodayar Hydro-Electric Scheme in lower and Upper Kodayar. Out of this the Electricity Board officials have required permanently only an area of 57.58 acres in Upper Kodayar and 119.25 acres in lower Kodayar. Both Electricity Board and Forest Officials have already jointly inspected the above area. The area required by the Electricity Board for the permanent occupation in Lower Kodayar has been demarcated on the ground and cairns are to be erected but for Upper Kodayar the demarcation has yet to be done by the Electricity Board.

36. *Valia ela.*—An area of 98.75 acres in Klamalai Reserved Forest has been leased for cultivation. Now it is found that encroachments have taken place an extent of about 31 acres according to the survey conducted by the Assistant Director of Survey and Land Records Nagercoil.

37. RAINFALL STATEMENT SHOWING THE MONTHLY AND ANNUAL AVERAGE RAINFALL FOR TIRUNELVELI SOUTH DIVISION FROM 1964 TO 1973 IN TIRUNELVELI DISTRICT IN MILLIMETRES.

Serial number and name of Station. (1)	January. (2)	February. (3)	March. (4)	April. (5)	May. (6)	June. (7)	July. (8)	August. (9)	September (10)	October. (11)	November. (12)	December (13)	Annual Average. (14)	Remarks (15)
1 Kannadian	34.18	10.75	36.59	46.42	34.93	19.38	23.07	8.45	48.50	197.25	135.80	207.00	802.32	..
2 Manimuthar	61.65	28.38	63.04	60.09	49.72	36.03	61.64	42.60	62.35	189.58	248.84	283.65	1,187.57	..
3 Cheranmahadevi	8.14	5.98	18.64	23.75	15.06	2.31	3.91	1.30	14.30	86.93	66.44	114.94	361.70	..
4 Tirunelveli	14.64	10.77	29.13	62.89	42.27	6.70	19.20	15.40	33.76	201.40	129.94	129.52	695.62	..
5 Nanguneri	14.06	15.08	30.00	45.75	29.30	15.88	22.60	26.87	43.77	170.58	128.97	136.64	679.50	..
6 Srivaikuntam	9.01	13.45	40.84	60.50	28.80	4.51	24.86	49.30	28.40	201.73	157.14	123.18	741.72	..
7 Tiruchendur	23.48	6.07	21.61	47.42	13.25	3.37	11.66	5.98	7.94	138.86	193.10	209.02	681.76	..
8 Kovilpatti	6.44	7.40	30.70	58.12	49.11	14.00	33.98	24.62	85.48	223.62	149.23	104.63	787.33	..
9 Tuticorin	9.54	16.37	45.09	44.29	19.97	3.96	14.60	9.67	16.60	181.81	125.83	114.76	602.49	..
10 Radhapuram	7.67	8.09	19.99	42.72	32.35	25.37	22.10	17.68	24.96	156.75	94.97	141.86	604.51	..
11 Sathankulam	15.88	11.08	28.64	66.38	16.92	11.28	7.19	14.41	17.85	178.21	112.99	141.70	622.53	..
12 Palayamkottai	13.21	8.74	32.63	65.58	44.03	7.50	17.74	24.26	38.00	239.64	124.70	122.59	738.62	
13 Kayathar	10.78	11.60	33.63	60.10	55.22	1.22	18.22	36.58	40.46	225.67	111.63	85.74	690.85	..
14 Oottapidaram	8.32	11.46	28.47	53.75	33.31	6.79	26.74	32.04	53.71	229.73	98.99	66.71	650.02	

KANYAKUMAR DISTRICT.

Serial number and name of Station. (1)	January. (2)	February. (3)	March. (4)	April. (5)	May. (6)	June. (7)	July. (8)	August. (9)	September (10)	October. (11)	November. (12)	December (13)	Annual Average. (14)	Remarks (15)
1 Pachiparai	17.59	18.16	85.00	171.18	187.87	206.64	202.53	110.43	184.35	360.66	191.68	104.65	1,810.74	..
2 Kulasekaram	19.17	22.01	73.04	214.58	199.35	262.88	184.42	95.55	180.58	362.19	213.62	122.48	1,949.87	..
3 Puthen Dam	18.51	22.82	83.29	179.83	153.81	180.64	184.77	91.04	221.00	421.43	209.34	122.06	1,888.54	..
4 Short Code	19.69	18.28	92.17	151.87	156.83	251.98	192.03	82.53	212.86	403.03	186.88	113.95	1,882.08	..
5 Thadikarankonam	19.19	19.42	80.31	226.96	195.47	322.98	214.83	105.79	233.86	457.92	222.39	135.63	2,234.74	..
6 Nagercoil	8.37	10.76	32.39	73.49	85.60	154.72	97.30	43.46	92.90	223.27	145.15	66.20	1,033.61	..
7 Seetha Paul	5.72	12.94	52.05	119.98	135.84	212.51	122.33	47.06	11.493	308.46	185.55	103.12	1,420.49	..
8 Balamore	33.95	42.47	54.68	212.18	241.40	500.00	437.69	257.09	385.00	504.62	245.47	196.16	3,110.71	..

TAMIL NADU AGRICULTURAL CENSUS MAIN 1976–77
DISTICT TABLES.

RAMANATHA PURAM DISTRICT.

38. *Lest of Reserved Forests*

	Name of reserved forest.	*Date of reservation.*	*Authority.*	*Are notified in acres.*
	(1)	(2)	(3)	(4)
	Tirunelveli District—			
1	Kudiraimozhi Theri Reserved Forest ..	309—21st June 1892 ..	.. Board of Revenue No 636, Revenue, dated 21st June 1892.	13,786.90
2	Vallanad Hill Blocks A & B R.F. ..	465— 14th October 1891	.. Notified in G.O. 976, Revenue, dated 14th October 1891 published in page 1041 to 1043 Part I Fort St. George Gazette, dated 20th October 1891.	4,659.2
	Kaliavoor Reserved Forest	197— 6th July 1889 ..	.. G.O. 564, Revenue, dated 6th July 1889, published in page 478 of Part I, Fort St. George Gazette, dated 16th July 1889.	158.07 *or* 0.64 Square Km.
	Mullakad Hare Isand Punnayadi Island R.F.	3rd November 1923 ..	.. No. 297, dated 3rd November 1923 (under the control of the Port Trust, Tuticorin as per G. O. No. 22, public memo dated 16th Januatr 1918).	1,200.97 *or* 4.86 Square Km.
5	Gangaikondam R.F.	9th August 1898 ..	.. 363, dated 2nd August 1898	1,391 acres (4.41 Sq. Kms.)
6	Sivalaperi R.F.	15th June 1891	.. 149, dated 10th April 1891 (Taken over to the control of Forest Department as per G.O. No. 3617, Development, dated 8th August 1951.)	213.14 acres (0.86 Sq. Kms.)
7	Melapattam R.F	3rd December 1897 ..	.. 588, dated 3rd December 1897 taken over to the control of Forest Department from 15th October 1951 A.N. according to Chief Conservator's No. 9813/49 dated 20th March 1951 (G.O. No. 3617, dated 8th May 1951).	....
8	Muthu R.F. (Wolf Hill)	22nd September 1896 ..	.. 474, dated 22nd September 1896 taken over to the control of Forest Department from 15th October 1951 A-N. according to Chief Conservator's No.9813/49!C1, dated 20th March 1931 G.O. No. 3617, Development, dated 8th August 1961.	848.13 acres (3.43 sq. kms.)

in the Tirunelveli South Forest Division.

Subsequent changes.				*Net area at present date.*	*Legal position*	*Remarks.*
Reservation.		*Disreservation.*				
Authority.	*Area notified in acres.*	*Authority.*	*Area notified in acres.*			
(5)	(6)	(7)	(8)	(9)	(10)	(11)
Published in page 360 of Part I of Fort St. George Gazette dated 23rd February 1937 Notification No. 141, dated 17th February 1937).	1,472.24	1. 156, dated 21st March 1896. (2) I G.O. No. 363,.. dated 3rd February (3) 155, dated 6th May 1914. (4) 345, dated 8th December 1924. (5) 307, dated 12th September 1935. (6) 476, dated 26th June 1937. (7) 610, dated 26th July 1939. (8) 565, dated 15th July 1940. (9) 632, dated 2nd August 1947. (10) G.O. Ms. No. 2553, Revenue, dated 11th August 1970.	66.22 0.91 188.00 2,160.00 3.73 1.58 4.07 3.06 59.37 46.00	12,726.20 acres. 51.50 sq. Kms.	Notified under Section 16 of the Madras Forest Act.	....
(1) Notification No. 390 dated 3rd August 1896. (2) 16, dated 24th February, 1911	428.28 (Land adjoining Vallanad Hill Blocks A I to III).	245, dated 5th October 1921.	12.00	5,087.38 acres. or 20.59 sq. Kms.	Do.	
Notification No. 16, dated 24th December 1910.	11.90	....	..	158.07 acres. or 0.64 Sq. kms.	Taken over charge from the P.W.D. on 18th April 1960 as per G.O. Ms. No. 423, dated 3rd February 1959.	....
..	..	..	..	1,200.97 acres. (4.86 sq. kms.)	Notified under Section 16 of the Madras Forest Act.	..
..	..	G.O. Ms. No. 3150, Agriculture, Department, dated 4th December 1971 (Handed over to Revenue Department for assigning to landless poor).	301.34 acres.	1,090.66 acres. (4.41 sq. kms.).	Do.	..
305, dated 2nd April 1940.	3.91	....	..	217.05 acres. (0.88 sq. kms.)	Do.	..
....	..	....		1,000 acres. (4.05 sq. kms.)	Notification under Section 16 of Madras Forest Act.	..
....	..	....	..	848.13 acres. (3.43 sq. kms.)	Do	..

	Name of reserved forest.	Date of rerervution.	Authority.	Are notified in acres.
	(1)	(2)	(3)	(4)
9	Thalayuthu R.F.	4th August 1896	368, dated 4th August 1896 taken over to the control of Forest Department from 15th October 1951 A.N. according to the Chief Conservator's No.9813/49C1, dated 20th March 1951, G.O. 3617 Development, dated 8th August 1951	1,384.55 acres (5.60 sq.kms.)
10	*Kalakad R.F.*			
	(1) Kalakad Thirukurangudy Ghat Forest Upper Slope.	20th December 1883	Notification No. 11	33,512.89 acres. (135.72 sq.kms.)
	(2) Kalakad Teak Tracts 1 to 3 ..	10th June 1889	Notification No. 165, dated 10th June 1889.	284.26 acres. (1.11 sq.kms.)
	(3) Kalakad Thirukarankudy Ghat Forest Lower Slopes.	21st November 1890	Notification No. 533, dated 27th November 1890.	21,083.20 acres (85.34 sq.kms.)
	(4) Vanamutty	25th April 1898	Notification No. 194, dated 25th April 1898, G.O. No. 59, dated 25th April 1898 published in page No. 361 and 362 of Part I of Fort St. George Gazette, dated 3rd May 1898.	1.99 acres. (0.008 sq.kms.)
11	(1) Valliyoor R.F.	28th January 1904	Notification No. 51 G.O. 818, dated 28th January 1904 published in page No. 146 of Part I of Fort St. George Gazette, dated 2nd February 1904.	605.11 acres.
	(2) Extension to Valliyoor R.F. ..	6th November 1908 ..	Notification No. 478 G.O. 3055, dated 6th November 1908 published in page 959 of Part I of Fort St George Gazette dated 17th November 1908.	112.50 acres
12	Kolundumalai R.F.	17th February 1890	Notification No. 88, dated 17th February 1890 G.O. F. 36, dated 17th February 1890.	1,540 acres
13	Therkuveeravanallur R.F.	27th November 1890	Notification No. 534, dated 27th November 1890 G.O.F. 294, dated 27th November 1890.	3,187.20 acres (12.90 sq. kms).
14	Manpothai R.F.	8th November 1898	Notification No. 511, dated 8th November 1898 published in page No. 108, Part I of Fort St. George Gazette, dated 8th November 1898 G.O.F. 222, dated 8th November 1898.	1,241. 99 acres (5.03 sq. kms.)
15	Karadikulam Ex-Zamin Forest (R.L.)	....	Taken over on 15th October 1951 ..	1,369.5 acres.

Subsequent changes.				Net area at present date.	Legal position.	Remarks.
Reservation.		Disreservation.				
Authority.	Area notified in acres.	Authority.	Area notified in acres.			
(5)	(6)	(7)	(8)	(9)	(10)	(11)
....	..	....	..	1,384.55 acres. (5.85 sq. kms.)	Do.	..
....	..	(1) 73 of 18th January 1911. (2) 416, dated 12th September 1919. (3) 385, dated 8th May 1940. (4) 960, dated 29th November 1940. ..	2.48 2.00 0.47 0.86	33,508.08 acres. (135.70 sq.kms.)	Do.	..
..	..	As per Board proceedings 29, G.O. No. 1187, dated 27th December 1902.	13.06 acres.	..	Do.	
				271.20 acres. (1.1 sq. kms.		
....	..		..	21,083.20 acres. (85.34 sq.km).	Do.	..
....	..		..	1.99 acres. (0.008 sq. kms).	Do.	..
....				605.11 acres	Sec 16	
....				112.50	Sec. 16	
				717.61 acres. or 2.91 sq. kms.		
....		398/5th July 1910] ..	0.83 acres	1,539.17 acres (623 sq. kms).	Do.	
....				3,187.20 acres (12.90 sq. kms.)	Do.	
....				1,241.90 acres. (5.03 sq. kms.)	Do.	
..		Area handed over to Rev. Dept. for settling Ceylon repatriates G.O.Ms. No. 137 Rev. Dept., dated 17th January 1970 handed over on 22nd August 1970.	725.00	91.22 acres (0.37 sq.kms.	Not yet Notified under any one of the Forest Act.	
		Area handed over to Rev. Dept for assignment to landless poor G.O. Ms. No. 1150. Agri. Dept., dated 4th December 1971 handed over on 22nd June 1972	553.28			

38. *List of Reserved Forests*

	Name of reserved forest.	*Date of reservation.*	*Authority.*	*Are notified in acres.*
	(1)	(2)	(3)	(4)
16	Kurumalai Ex-Zamin Forests (R.L.)	....	Taken over on 15th October 1951	3,642.76
17	Mahendragiri	27th May 1898	Notification No. 249, dated 27th May 1898, G.O. No. 76, dated 18th May 1898 published in paragraph No. 478, Part I of Fort St. George Gazette, dated 27th May 1898.	33.78 acres
18	Nadukani I Bit	12th December 1903	Notification No. 487, dated 12th December 1903 G.O. No. 212, dated 12th December 1903 published in page 1339, Part I of Fort St. George Gazette, dated 15th December 1903.	3. 84 acres
19	Nadukani II Bit	14th June 1905	Notification No. 244, dated 14th June 1905, G.O. No. 104, dated 14th June 1905.	6.46 acres
20	Kulisalkidai	Do.	Do.	0.99 acres
21	Thadikaitottam	Do.	Do.	2.55 acres
22	Ladantottam	27th March 1906	Notification No. 37, dated 27th March 1906, G.O. dated 27th March 1896 published in page 478, Fort St. George Gazette, dated 27th May 1898.	10.22 acres
23	Taraganar Estate	10th May 1907	Notification No. 243, dated 10th May 1907, G.O. No. 9, dated 10th May 1907, published in page No. 508 of Part I of Fort St. George Gazette, dated 21st May 1907.	110.00 acres
24	Mayambarambu Estate	5th September 1910	Notification No. 497, dated 5th September 1910, G.O. No. 2933, dated 5th September 1910 published in page No. 1550 and 1551 of Part I of Fort St. George Gazette, dated 20th September 1910.	109.20 acres
25	Addition to Map No. 20 Survey No. 483 and 484 of Malayadipudur.	11th March 1912	Notification No. 147, dated 11th March 1912, G.O. No. 729, dated 11th March 1912 published in page 373, Part I of Fort St. George Gazette, dated 2nd April 1912.	6.50 acres
26	Addition Map No. 1 Nadukani last Bit Survey No. 982 of Thirukaran kudy village.	14th July 1913	Notification No. 349, dated 14th July 1913.	1.32 acres
27	Addition to Map No. 1, Mahendragiri Survey No. 984/2.	12th July 1921	Notification No. 163, dated 12th July 1921 published in page No. 738 of Fort St. George Gazette Part I, dated 12th July 1921.	9.88 acres
28	Addition to Map No. 1, Karimandiamman Shola Survey No. 103/1 and 3.	21st April 1923	Notification No. 110, dated 21st April 1923.	89.74 acres

In the Tirunelveli South Forest Division.

Subsequent changes.						
Reservation.		*Disresrvation.*				
Authority. (5)	*Area notified in acres.* (6)	*Autority.* (7)	*Area notifien in acres.* (8)	*Net aren at present date.* (9)	*Legal position.* (10)	*Remarks.* (11)
....	....	Area handed over to Revenue Department for assignment to landless poor G.O. Ms. No. 3150, Agriculture Department, dated 4th December 1971 handed over on 22nd June 1972.	500.00 acres.	3,142.96 acres (12.72 sq. kms.)	Not yet notified under any one of the Forest Act.	....
....	....	....	....	33.78	Sec. 16	....
....	....	....	....	3.84 acres	Sec. 16	..
....	....	....	....	6.46 acres	Do. ..	..
....	....	....	....	0.99 acres	Do.	
....	....	....	....	2.55 acres	Do.	..
....	....	....	....	10.22 acres	Do.	....
....	....	....	....	110.00 acres	Do.	..
....	....	....	....	109.20 acres	Do.	..
....	....	....	....	6.50 acres	Do.	..
....	....	....	....	1.32 acres	Do.	..
....	....	....	....	9.88 acres	Do.	..
	....	During 1940.41 an area 0.47 acres in Kalakad R.F. disreserved and 0.86 acres disreserved.	0.47 0.86 1.33	88.41 acres (area as on 31-3-1974) 55,248.93 or (223.59 sq. kms.)	Do.	...

Name of reserved forest.	Date of reservation.	Authority.	Area notified in acres.
(1)	(2)	(3)	(4)
29 Chalikulam R.L.	....	Taken over on 15th October 1951 from the Revenue Department.	4,183.86 acres.
30 Singampatti Ex-Zamin Forest (R.L.)	....	....	54,732 acres. Part of Singampatti Forests i.e. 28,050 acres roughly, lies in Ambasamudram Range of Tirunelveli North Division.
31 Sathankulam (R.L.)	....	Taken over by the Forest Department from the Revenue department on 1st September 1963.	2221.43 acres. (8.99 sq. kms.)

in the Tirunelveli South Forest Division.

Subsequent changes.				*Net area at present.*	*Legal position date.*	*Remarks.*
Reservation.		*Disreservation.*				
Authority.	*Area notified in acres.*	*Authority.*	*Area notified in acres.*			
(6)	(7)	(8)	(9)	(10)	(11)	(12)
..	..	Area handed over to Revenue Department for settling Ceylon repatriates G.O. No. 2313, Revenue, dated 10th October 1969 handed over on 13th June 1970.	520.00 acres.	..	Not yet notified under any one of the Forest Act.	....
		Government Memo No. 85647!D II 703 Agriculture Department, dated 7th September 1970 (handed over on 27th October 1970).	90.69 acres.			
		Government Memo No. 68222 Rehabilitation II/70-7, dated 30th September 1970 handed over on 27th October 1970.	14.09 acres.			
		For assignment to landless poor as per G.O. Ms. No. 3150, Agriculture Department, dated 4th December 1971 handed over on 15th April 1972.	101.27 acres.			
			726.05	3,457.81 acres.		
		Area handed over to the Revenue Department for assignment to Kattabomman's descendants G.O. Ms. No. 558, Forest and Fisheries Department, dated 18th July 1974.	..	615.00 acres.		
				2,842.81 or 11.51 sq.kms.		
..	..	....	..	26,682 acres lies in Tirunelveli South Division.	These Ex-Zamin Forests have not yet been constituted into Reserved Forests. The area was notified under section 26 of M.F. Act on 3rd August 1938.	..
..	..	..	..	2,221.43 acres. (8.99 sq. kms.)	Notified only under section 26 of Forest Act.	

31. *Last of Reserved Forests*

Name of reserved forest.	*Date of reservation.*	*Authority.*	*Are notified in acres.*
(1)	(2)	(3)	(4)
II. Kanyakumari district—			
1 Therkumamalai East Reserved Forest.	....	Taken over the fromTravancore-Cochin State Government on15th October 1956 due to re-organisation of States.	2,953 acres (11.87 sq. kms.
2 Therkumamalai West Reserved Forest.	....	Do.	2,240 acres. (9.07 sq. kms.)
3 Thadagamalai Reserved Forest ..	....	Do.	1,667 acres. (6.75 sq. kms.
4 Poigaimalai Reserved Forest.. ..	Do	•	1,915 acres. (7.75 sq. kms.)
5 Mahendragiri Reserved Forest ..	....	Do.	10,806 acres. (43.73 sq. kms.)
6 Veerapuli R.F.	....	Do.	61,650.75 actes. (249.50 sq. kms.)
7 Pechiparai Block 1 A R.F.	....	Do.	66.35 acres. (0.26 sq. kms.)
8 Pechiparai Block I B R.F.	....	Do.	80.99 acres. (0.33 sq. kms.)
9 Kalkulam Grazing Block I R.F. ..	....	Do.	95.08 acres. (0.39 sq. kms.)
10 Kalkulam grazing Block II RGF. ..	....	Do.	109.12 acres (0.44 sq. kms.)
11 Klamalai R.F.	....	Do.	153,60.00 acres. (62.16 sq. kms.)
12 Velimalai R.F.	....	....	3,167.01 acres. (12.82 sq. kms.)
13 Asambu Proposed Reserve	....	Do.	9,844.00 acres. (39.84 sq. kms.)
14 Thodalikadu R.L.	....	Do.	380.52 acres. (1.54 sq. kms.)
15 Kottakarai R.L.	Do.	Do.	46.00 acres. (0.19 sq. kms.)

1. 2.97 acres handed over to the Railway Department in Kottakarai on 8th March 1974 as per Government Memo No.5741/FR II/N4–2, dated 16th February 1974. (Forest and Fisheries Department).

2. 18.94 acres handed over for Agirnar Anna College, Aramboly for College Hostel building on 28th August 1974 as per G.O. Ms. No. 349, Forests and Fisheries Department, dated 30th April 1974.

n the Tirunelveli South Forest Divison.

Subsequent changes.				Net area at present date.	Legal position	Remarks
Reservation.		Disreservation.				
Authority.	Area notified in acres	Authority	area notified in acres			
(5)	(6)	(7)	(8)	(9)	(10)	(11)
..	.	..	..	2,935 acres (11.87 sq.kms.)	Notified under Section 18 of regularisation II of 1068 Travancore Cochin State.	..
..	..	..	..	2,240 acres (9.07 sq.kms.)	Do.	..
..	..	..	..	1,667 acres. (6.75 sqlkms.)	Do.	..
..	..	..	..	1,915 acres (7.75 sq.kms.)	Do.	..
..	..	..	..	10,806 acres (43.73 acres)	Do.	..
..	..	..	..	61,650.75 acres (249.50 sq,kms.)	Do.	..
..	..	..	..	66.35 acres (0.26 sq.kms.)	Do.	..
..	..	..	..	80.99 acres (0.33 sq.kms.)	Do.	..
..	..	..	..	95.08 acres (0.39 sq. kms.)	Do.	..
..	..	..	..	109.12 acres (0.44 sq.kms.)	Do.	..
..	..	..	..	153,60 acres (62.16 sq. kms.)	Do.	..
..	..	..	..	3,167.01 acres (12.82 sq.kms.)	Do.	..
..	..	.	..	9,844 acres (39.84 sq.kms.)	Notified only under Section 6 of Travancore Forest Act.	..
..	..	..	..	380.52 acres (1.54 sq.kms.)	Notified under Section 4 of M.F. Act G.O. Ms. No. 686, dated 21st July 1975.	..
..	..	..	..	46.00 acres (0.19 sq.kms.)	..	..

CHAPTER II

DESCRIPTION OF THE FORESTS

SECTION I.

COMPOSITION AND CONDITION OF THE CROP.

39. *General.*—Various types of forests from luxuiant tropical wet evergreen forests to southern thorn scrub forests occur in this division, because of the diverse locality factors. Rainfall varies from 50 cms. to 310 cms and elevation from the sea level to 1829 m. Edaphic. and boitic factors have played equally important roles to bring about the types of forests as it exists today.

The following forests types occur in the division.—

1. 1A/C3—Southern hill-top tropical evergreen forests.
2. 1A/C4—West Coast tropical evergreen.
3. 2A/C2—West Coast semi-evergreen forests.
4. 2A/C3—Tirunelveli semi-evergreen forests.
5. 3B/CI(b)—Moist teak forests.
6. 3B/CI(c)—Slightly moist teak forests.
7. 3B/C2—Southern moist mixed decidous forests.
8. 5A/CI(b)—Dry teak forests.
9. 5A/C3—Southern dry mixed deciduous forests.
10. 5/DS2—Dry Savannah forests.
11. 6A/CI—Southern thorn forests.
12. 6A/C2—Carnatic umbrella thorn forests.
13. 6A/DSI—Southern thorn scrub.
14. 6B/ISI—Desert dune scrub.
15. 8A/CI—Southern sub-tropical hill forests.
16. 8A/EI—Ochlandra reed brakes.

Instead of giving a broad and generalised description of the floristic compostion for the various types, the forest types seen in each reserved forest and the composition of each type as seen in that particular reserved forest are given below and marked in the forest type map also.

The forest types have been plotted on the map based on the visual observation. It must be well remembered that the line of demarcation between one type and another is not very sharp and the transition takes places gradually and almost imperceptibly. However, in certain locasities, some type which may not be related in the "successional scheme" have been found to occur due to certain special factors like "micro-climate", occurrence of valleys etc.

KANYAKUMARI DISTRICT.

1. *Therkumalai Reserved Forests.*

40. Therkumalai comprises of two Reserved Forests viz. Therkumalai east and west covering an extent of 2093 ha. (5,175 acres). Due to heavy browsing and grazing, illicit fellings in the past and periodic fires, the vegetation is in a highly degraded state. It is virtually devoid of any tree growth except in a sheltered valley where Tamarind (*Tamarindus indica*) occurs. The entire Reserved Forests supports *Cymbopogon flexuosus* almost to the exclusion of other species. *Themeda frandia* it another common grass. Saplings of *Acacia Planiifons* and *Acacia latronum* occur here and there along the western slopes but these are not allowed to grow by the millitant villagers who live nearby. It is fair to assume that the forests fall under the type 5/DS2 viz. Dry Savannah forests except for the difference that *Cymbopogon flexuosus* dominates the the vegetation. The forests represent the degradation stage of dry deciduous forests.

2. *Thadakamalai Reserved Forests.*

41. This Reserved Forest covers an extent of 675 ha. (1,667 acres) and lies adjacent to Poigamalai Reserved Forests. The forests of this Reserved Forests can be conveniently classified under the type 3B/CIc i.e. South Indian Moist deciduous forests—slightly moist teak forests. The important species occurring here are described below :—

Top canopy : *Tectona grandis* : is the predominent species occurring to an extent of about 40 per cent and associated with it are *Anogeissus laifolia, Terminalia paniculara, Pterocarpus marsupiam* and *Grewia tillaefolia.*

Second Srovey : *Zizyphus xylopyrus,* *Emblica officinalis, Dillenia pentagyna and Sirychnos nuxvomica* occur to such an extent in the second storey that other species like *Butea monosperuma;* and *Carea arborea* are paled into insignificance. *Acacia ferruginea* occurs in dry sites.

Shrubs : *Randia dumetorum, Helectress isora, Atalantia monophylla, Clerodendron infortunatum* are the common shrubs.

Grasses : *Cymbopogon flexuosus* and *Themeda* species are the common grasses.

Climbers : *Acacia intsia, Bauhinia vahlii* and *Calycopteris floribunda* are the important climbers.

3. *Poigaimalai Reserved Forests.*

42. This is a small Reserved Forest spread over 775 ha. (1,915 acres) bounded by Mahendragiri Reserved Forests on the North-east Thadakamalai Reserved Forests on the South-east and Asambu (Proposed) Reserved Forests on the South-West. Floristically, there are only two forest types viz.

(*a*) 3B/C1c—South Indian moist deciduous forests—slightly moist teak forests.

(*b*) 3B/C2/—South Indian moist deciduous Forests Southern moist mixed deciduous forests.

The floristics composition of each type is decribed below :—

(*a*) 3*B*/*C*1*c*—*Slightly moist teak forests.*

Top Canopy :—Teak is the predominant species of the top conopy constituting about 18.20 per cent of the entire flora. *Grewia tiliaefolia, Terminalia chebula, Lagerstroemia lanceolata* and *Melia composita, Pterocarpus marsupium, Terminalia paniculata* are the common a assoicates. *Anogeissus latifolia* occurs on the drier tsites. There is a sprinkling of *Dalbergia latifolia.*

Second Storey.— *Zizyphus xylopyrus, Strychnos nuxvmica Morinda tinctoria* and *Wrightia tinctoria* are com-, monly seen in the second storey. Fire burnt areas are inhabited by *Emblica officinalis* and *Carrya arborea* while in the drier sites *Acacia sundra* and *Albizzia amara* have been noted.

Shrbs :—*Randia dumetorum, Atalntia monophylla, Limonia actdissima, Helectres isora, Lantana camara* and *Clerodendron infortunatum* are the common species.

Grasses :—*Cymbopogon flexuosus* is the predominant grass. *Ibemeda* species and *Andropogon* species occur.

Climbers : *Acacia intisia* and *Calycopteris floribunda* are frequently noticed.

(*b*) 3*B*/*C*2—*Southern moist mixed dec duous forests*

Top Canopy :—Teak is virtually abesent. *Terminalia paniculala* is a common species and associated with it are seen. *Terminalia Chebula, Lagerstreomia lanceolta Grewia tilaefolia, Dalbergia latifolia, Schleichera oleosa, Albizza odoratissima and Vitex altissima.*

Second Storey :—*Butea monosperma, Wrightia tinctoria, Emblica officianals, Strychnos nuxvomica, Randia dumetorum, Zizyphus xylopyrus* and *Sterculia villosa* form the second storey. Drier sites have some Acacias. There is not much diversity in the shrubs, grasses and climbers between the slightly moist teak forests and the moist mixed deciduous forests.

4. *Mahendragiri Reserved Forests* :

43. Mahendragiri Reserved Forests occupied in are of 4,376 ha. (10,806 acres) with some enclosures. The various forest types met with in this Reserved Forests are given below in the order of priority.

(*a*) 6A/CI—Southern thorn forests.

(*b*) 6A/C2—Carnatic umbrella thron forests.

(*c*) 8A/C1—Southern Sub-tropical hill forests.

(*d*) 5A/C3—Southern dry mixed deciduous forests.

(*a*) 6A/C1—*Southern thorn forests* :

Top canopy—*Zyzyphus xylopyrus* and *Albizzia amara* are the predominant species. Associated with them, occur *Strychnos potatorum, Diosovros montana, Morinda tinctoria* and *Dichrostachys cinera.* Along the stream banks, *Schleichera oleosa* and *Stereospermum suaveolens* with occasional sprinkling of *Syzygium cumini* are common.

Shrubs : *Atalantia monophylla, Limonia acidissima Randia dumetorum, Dodonaea viscosa* and *Cassia auriculata* are the most common shrubs.

Grasses—In areas heavily hacked by villagers, *Cymbopogon flexuosus* predominates.

Climbers : The common climbers are *Zizyphus Canoolia* and *Pterolobium indicum.*

(*b*) 6A/C2—*Carnatic umbrella thorn forests* :

Top canopy : *Acacia planifrons* is the characteristic species of these forests and often *Acacia latronum* is found associated with it. *Zizyphus zylopyrus, Acacia cundra Albizzia amara, Commiphora caudata* and *Dichrostachys cinerea* have been found to be the other associates.

Shrubs—*Carissa carandus, Randia dumetorum* and *Cassia auriculata.*

8A/C1—*Southern sub-tropical hillforests*

This type of forests are seen in the upper reaches especialy in the valleys near Hariharaputhra estate. They are found mixed with grass lands and are locally termed as 'sholas' though they are not comparable with the 'Sholar' of the Nilgiris and the Palnis. They exhibit more of the sub-tropical features.

Top canopy—*Zyzypium arnottianum, S. cardneri, Actinodanne hookeri, Litsea species* and *Aporosa species* are frequently met with. At the lower reaches *Hopea parviflora* and *Pterospermum* species are seen though they do not exactly fit in with this type.

Second storey Ilex wightiana dominates the seconnd torey.

Shrubs.— *Strobilanthus* species is the most common shrub.

Grasses There are not many grasses occurring as undergrowth except for a few occasional clumps of Ochlandra. Canes are the most common climbers. Epiphytes are also common.

(*d*) 5A/C3—*Southern dry mixed deciduous forests.*

A small patch of this type occurs at the lower elevation. The top canopy consists of *Anogeissus latifolia,* Pterocarpu marsupium and *Alibizzia amara* while the second storey contains *Zizyphus zylopyrus Acacia ferruginea* and *Wrightia tinctoria.* Themeda triandra is the common grass and occassionally *Hetropogon contortus* is seen. *Zizyphus oenoplia* and *Acaicia intsia* are the common climbers.

5. *Velimalai Reserved Forests :*

44. This is a small isolated Reserved Forests covering an extent of 1,282 ha. (3167 acres) and supports only one type of forests viz., the " slightly most teak forests ". This Reserved Forests is surrounded by a number of villages and biotic influences have played a great role in setting about a certain amount of degradation along the boundaries. Frequent forest fires and illicit fellings have resulted in the repalcement of the original vegetation by inferio species.

3B/C1c—*Slightly moist teak forests.*

Top Canopy : *Tectona grandis* predominates the top canopy. Associated with it can be seen *Terminalia paniculata, Terminalia bellerica, Anogeissus latifolia, Pterocarpus marsupium, Bridelia retusa, Grewia tiliaefolia, Dalbergia latifolia* and *Albizzia lebbeck, Terminalia alata* is rare.

Second Storey: Butea monosperma, Strychnos nuxvomica Careya arborea, Macaranga roxburghii, zyzyphus zylopyrus and *Emblica ffiocinalis.*

Bamboos : *Bamboos are almost absent.*

Shrubs : The common shrubs are *Clerodendron infortunatum, Lantana Camara, Randia dumetorum, Helectres isora,* and *Mallotus philipinensis.*

Grasses: *Themeda triandra, Cryza grandiglomia, Imperata cylindrica* and *Cymbopogon flexuosus.*

Climbers : *Acacia intsia, Burea suberba,* Calycopteris *floribunda* and *Cryptostedis grandiflora.*

6. *Veerapuli Reserved Forests :*

45. This is a sprawling Reserved Forest spread over Azhagiapandiapuram and Kulasekaram Ranges with a total area of 24,971 ha. (61.650 acres) wide variations exist in altitude and climate, especially rainfall.

The important forest types occurring in this Reserved Forest are:—

(i) 1A/C3—Southern hill top tropical evergreen
(ii) 2A/C2—West coast semi evergreen forests.
(iii) 3B/C1c—Slightly moist mixed deciduous forests
(iv) 3B/C2—Southern moist mixed deciduous forests
(v) 8A/E1—Ochlandra reed brakes.

The order of importance, based on the area occupied by each type, is 3B/C2, 8A-E1, 2A/C2, 3B/Clc and 1A/C3.

(i) 1A.C3—*Southern hilltoptropical evergreen forests.*

This type occurs in Muthukuzhivayal adjacent localities. Considerable areas of this type have either been submerged in Kodayar Hydel Project. This type of forest is an inferior edition of the typical wet evergeen forests. None the less, blocks where the composition and growth approximate to the evergreen forest are not wanting. Areas exposed to wind and very steep slopes have a poorer type of vegetation.

Top Canopy : *Calophylum elatum, Cullenia excelsa, Poecilonneuron Pauciflorum, Keema attenuata, sysoxylum malbaricum, Canarium strictum, Agrosistachys maeboldi, A., Indica, Agleia roxburghiana Hopeaparviteora* and *Mesu ferrea dominate the top* canopy.

Second storey: Hydeocarpus species, Cinnamomum seylanicus, Haligarna species, Syztygium cumini, Macaranga roxburghii and *Elaeocarpus species* from the second storey.

Bamboos : Bamboos are totally absent.

Shrubs: There is a dense growth of evergreen shrubs.

Grasses Ochlandra travancorica and other Ochlandras occur here and there.

Climbers : *Calamus species, Calycopteria floribunda,* Dioscorea species, Entada ohassoloides are the common climbers.

Endemism: In precipitious localities bordering Tirunelveli District, especially around Upper Kodayar, *Bentinckia coddapanna,* an interesting palm occurs as on endemic species. Pockerts of this species can be seen even from a distance and it is a delightful slight to watch this palm occupying the cliffs where the soil is very shallow. Along the depressions *Arenga wightii* and Pinanca dicksonii, two other palms, are found in profusion, and the formes yields a highly intoxicating toddy which is much sought after by the tribals.

(ii) 2A/C2—*Southern hill top tropical evergreen Forests.* This forest type is met with around Balamore and north-western and southern-eastern parts of this Reserved forests.

Top Canopy: *Hopea parviflora Mesua ferea, Melia composita, Kinsiodondron pinnatum, Arcocarpus heterophyllus. Sterwspermum species, Pterospermum suberifolium and Vitex altssima* are the major species noticed in the top canopy.

Secondstorey : is usually occupied by *Macaranaga roxburghti, Disopyros species, Xanthophyllam flavescens* and *Polyalthia fragrans.*

Bamboos are totally absent.

Shrubs.—There is a fairly dense growth of shrubs especially *Strobilanthus* species and *Curcuma* species.

Grasses and reeds.—Ochlandra species occur to a considerable extent but not to the exclusion of other species.

Climbers.—In the moist depressions *Calamus* species are common.

A characteristic feature of this forest type is that wherever the forests are cleared, Macaranca roxyburghi appears in profusion and dominates the clearings.

(iii) 3B/C1c—*Slightly Moist Teak Forests* :

Top Canopy.—Teak occurs in fair quantities. Associated with Teak are commonly seen *Terminalia paniculata, T. alata, Pterocarpus marsupium, Anogeissus latifolia, Grewia tiliaefolia, Lagerstroemia lanceolata Vitex altissima, Bridella retusa and Dalbergia latifolia.*

Second Storey.—Emblica officinalis, Careya arborea, Dilleniats pentagyna and Wrighia tincioria are commonly seen.

Bamboos are totally absent.

Shrubs and Climbers.—The species listed out for this type and descriped under the other Reserved Forests occur in this Reserved Forests too.

(iv) 3B/C2—*Southern Moist Mixed DeciduousFoests* :

This is the predominant type seen in Veerapuli Reserved Forests especially in Alagiapandiapuram Range.

Top Conopy : Teak is almost absent. The predominant species occurring in the top canopy are *Terminalia paniculata, T. alata, Prerocarpus Marsupium, Anogeissus latifolia, Lagerstroemia, lanceolata, Gruwia tiliaefolia and Albizaodoratissima, Melia composita Mechilus macrantha and Butea monosperma, Vitex altisuima. Pterospermum suberifolium and Kinptodendron pinnatum* also accur to some extent.

Second Storey.—Dillenia pentagyna, Emblica officianalis and *Careya arborea* ware the species frequently met with in the second storey.

Bamboos are almost absent.

Shrubs.—Helectres isora, Maleotus philippensia, Lantana camara, Clerodendion infortunarum and *Randia deumetorum* are the common shrubs.

Climbers.—Acacia intsia, Calycopteis flolibunda and *Bauhinia Vahli* form the common climbers.

(v) 8*A*/*E*1—*Ochlandra Reed Brakes.*

The "Reed Brakes" form an important and characteristic forest type occurring in Veerapuli Reserved Forests Three species of reeds viz. Ochlandra tranvancorica, *O reed* and *O. brandisii* characterise this forest type. They occur almost in pureform in the higher reaches. In the depressions, sho as are seen.

7. *Klamala Reserved Forests.*

46. Klamalai Reserved Forests lies entirely in Kulasekaram Range adjacent to Kerala border. It covers an extent of 6,219 ha. (15,360 acres). The importans forest types seen in this Reserved Forests are :

(i) 2A/C2—West Coast Semi Evergreen Forests and

(ii) 3B/C2—Southern Moist Mizxed Deciduous Forests.

(2*A* i /*C*2—*West Coast Semi Evergreen Forests* :

The floristic composition described for this type under Veerapuli Reserved Forests almost holds good for Klamalai Reserved Forests except that *Aporosa lndyayana* and *Vitex altissima* predominate the northern and north-western portions of this Reserved Forests. *Ormosia travancorica* is another species frequently seen in these forests.

(ii) 3*B*/*C*2—*Southern Moist Mixed Deciduous Forests.*

The description given under Veerapuli Reserved Forests applies well for this Reserved Forests also.

8. *Asamba* (*Proposed*) *Reserved forest.*

47. The entire Asambu (porposed) Reserved Forest lies in Alagiapandiapuram Range and coversan extent of 3,986 ha. (9,844 sacres). The chief forest types seen in this Reserved Forests are :

(i) 3B/C1c—Slightly Moist Teak Forests and

(ii) 3B/C2—Southern Moist Mixed Deciduous Forests

In addition to the above two typies, some chunks of grass lands interspersed with barren rocks occur.

(i) 3*B*/*C*1*c*—*Slight by Moist Teak Forests* :

This type is seen in the lower reaches of the Reserved Forest.

Top Canopy.—Teak occurs in fair quantities. The common associates are *Anogeissus latifolia, Terminalia paniculata, T. alata, T. Bellerica, Pterocarpus marsupium Grewia tillaefolia Adina cordifolia lagerstroemia lanceolata* and *Dalbergia latifolia.*

Second Storey.—Zizyphus xylopyrus, Emblica officinalis, Careva arborea, Dillenia pentagyna and *Strychnos nuxo vomica, Acacia ferruginea* occurs in drier localities.

Bamboos.—Bamboos are virtually absent except for stray clumps occurring here and there.

Shrubs.—Randia dumetorum, Helectress isora, Clerodendron infortunatum, Lantana camara, Atalantia monophylla and Koeniqui deserve mention.

Grasses.—Along the lower reaches Cymbopogon flexuosus occurs commonly and at times it is found mixed with C. gidarba. Themeda is another common grass.

Climbers.—Calycopteris floribunda, Acacia intsia and *Bauhinia vahlii* are the climbers frequently met with.

The teak occurring in this forest type is mostly crooked and mis-shaped Fire burnt areas usually support *Emblica officinalis, Careya arborea and Cymbopogon flexuosus.*

(ii) 3*B*/*C*2—*Southern Moist Mixed Deciduous Forests* :

This is the predominant forest type of this Reserved Forests covering the Upper reaches.

Top Canopy.—Teak is totally absent. *Terminalia paniculata* is a common species. The other species are *T.alata T. Chebula, T. bellerica, Dalbergia latifolia, Schleichera deosa, Albizzia odoratissima, Vitex altissima, Polyalthia fragrans, Bridelia retusa, Alstonia scholaris* and *Bombax ceiba.* In moist localities, especially near the water urses, *Hopea parviflora and Mesua ferrea* are common.

Second Storey.—Butea monosperma, Emblica officinalis, Wrightia tinctoria, Strychnos nuxvomica and *Sterculia villosa* are common.

Bamboos.—Bamboos are absent.

Shrubs.—Helectres isora, Limonia acidissima, Randia dumetorum, Atalantia monophylla and *Clerodendron infortunatum* are the common shrubs.

Climbers.—Acacia intsia, Calycopteris floribunda, Calamus species and *Bauhinia vahli* form the important climbers

The grass lands.—The grass lands support a vat of grasses. The soil is usually shallow and barren rocky patches are met with frequently.

48. *Pechiparai Grazing Block is* small— Reserved Foress and covers an extent of about 60 ha (147 acres). There is only very sparse tree growth and a portion of the area has already been converted into Cocoa plantation.

49. *Kottakara Reserved Land* has been set apart for accommodating a college and play ground and is in the process of disreservation. A portion has been handed over to Railways. The balance area contains Acacias mostly.

50. *Kalkulam Grazing Block.*—This is in 2 bits. Neither of them contain any growth whatsoever except remnants of teak plantations raised in 1963 by way of a fewsaplings sticking out here and there in the bouldery rocks which is fully covered by coarse grass, subject to annual fires.

TIRUNELVELI DISTRICT

1. *Valliyoor Reserved Forests.*

51. This is a small Reserved Forests of 290.57ha. extent, located on the Eastern slopes of western ghats In Nanguneri Range. The type of forest here is 6A/C1 "Southern Tropical Thorn Forests". *Acacia planifrons* associated with other Acacias and allied thorny Mimosal and Zizyphus forms the main species. Stunted specimen of the tress of the dry deciduous species are also seen.

TopStorey.—Acacia planifrons, Acacia latronum, Albizzia amara, Chloroxylon swietenia, Azadirachta indica, Zizyphus xylopyrusZizyphus oenoplia etc.

Shrubs.—Atalantia monophylla, Limonia acidissima, Randia dumetorum, Dodonea viscosa, and *Cassia auriculata.*

2. *Kalakad Reserved Forests*

52. The Kalakad Reserved Forests occupy a vast extent of 22,359 ha. raising from the plains on the eastern slopes of the western ghats. It goes over the ridge and stretches on the western side of the ridge. Because of the wide variations in altitude and climate especially rainfall, different types of forests occur in this Reserved Forests. The important forest types are:—

(i) 1A/C4—West Coast Tropical Evergreen Forests;
(ii) 2A/C3—Tirunelveli Semi Evergreen Forests;
(iii) 3B/C2—Southern Moist Mixed Deciduous Forests;
(iv) 5A/Clb—Dry Teak Forests.
(v) 5A/C3—Southern Dry Mixed Deciduous Forests.
(vi) 8A/E1—Ochlandra Reed Brakes.

On account of it rich fauna and flora the entire Kalakad R.F. has been notified as Wildlife Sanctuary in G. O. Ms. No. 183, Forests and Fisheries, dated 6th March 1976.

The floristic composition of each forests type is given below:—

(i) *1A/C4—West Coast Tropical Evergreen Forests.*

This type of forest occurs in the Upper reaches of Kalakad Reserved Forest especially in the Western slope at an altitude of 900 meters to 1600 metres. The growth pattern of this forest type is not uniform due to local variations such as Micro climate. Where the influence of wind is more, the growth deteriorates both in quality and volume. With increasing elevation and high rainfall the height of the forest diminishes though it remain dense and Ever greenchanging in to the relatively stunted montane Wet Sub-tropical forest.

Top Storey.—Palaquium ellipticum, Mesua ferrea, Cullenia excelsa, Canarium strictum, Hopea parviflora, Dysoxylum malabaricum, Balanocarpus utilis, Elaeodendron glaucum, Acrocarpus fraxinifolius, Elaecarpus, tuberculatus, Alstonia scholaris, Calophyllum elatum Cluta travancoria, Mangifera indica, Artocarpus hirsuta and Podocarpus latifolia. the only indegenous coniferi of the south occurs round about Sengalteri, with profuse with advance growth and pole crop.

Second Storey:—Filicium decapiens, Chinnamomum zylanicum, Macaranga roxburghili, Mollotus philippinensis Hydnocarpus wightiana, Myristica laurifolia, Mimusops zlangii Garcinia spicata, Eugenia jambolana etc. *Ochalandra* species brakes occur gregariously along the streams especially in Sengalteri and Neterical,.

Shrubs. Strobilanthus species, *Macaranga peltata Clerodendron viscosum, Ixora arborea* and large ferns·

Undergrowth. Laportea granulata, Strobilanthut Solanum, Puberscems, Carcuma angustifolia, Calamus ravancoria, Solanum verbascifolium

Climbers.— Wild pepper, Entada phaseoloides, etc.

(ii) 2A/C3—*Tirunelveli Semi—Evergreen Forests.*

This forest type is charcterised by dense vegetation comprising the top canopy. The two or three canopies can easily be distinguished. *Epiphytic orchids* are more dominantly seen than the *Epiphytic mosses* or *lichens*, Climbers and canes are abundantly present and their increase in *frequanicy* is proportional to the increase in altitude.

These forests received well distributed rainfall from South-West and North-East monsoon and consipicuously rain is absent for a short period from January to April. The floristic composition of the forests is given below:—

Top Canopy: Stereospermum personatum, Dalbergia latifolia, Chickrassia tabularias, Artocarpus heterophyllus *Hopea parviflora, Kingeodendron pinnatum, Pterospermum* species.

Middle Storey. Bischofia, Euphorbia longanta. Diopyros, Drypotus venusta, Carallia, Aglaia.

Undergrowth: *Glycosmis, Strobilanthus* species Climbers and canes are abandant especially at higher levels. Among climbers *Entada, Smilax* are more frequently seen.

(iii) 3*B*/*C*2—*Southern Moist—Mixed Deciduous Forests.*

The flora consists mostly of decidous species though some Evergreen dominants are also sometimes met with. Teak is present very rarely and this may be an indicator of Secondary succession.

Along the damp valleys in cooler patches in the lower, hills and on high ground with shallow or porous soils this forest type is met with. Corresponding to the prevailing wetness the vegetation shows a tendency to be semi-evergreen.

Top Storey:—Terminalia paniculata, Anogeisus latifolia, Albizzia odoratisima, Da bergia latifolia and *Lagerstromia lanceolata.*

Second Storey.—Wrightia tinctoria, Phyllanthus emblica Strychnos nuxvomica, Strerculia villosa, Grewia tileafalia Cassia fistula, Butea monosperma, Careya arborca, Delina pentagyna, Bamboos sparsse.

Shrubs.—Tabernae montana

Climbers and Epiphytes. Epiphytes and climbers are frequently found in moister localities. Among climbers *Calypteris floribunda, Ichnocarpus* species, *Crytostegia grandiflora* are frequently seen.

Grasses. The presominent grasses are *Cymbopogon flexuous* and *Thememeda triandra. Imperata* species and *Pennesetum* species are also sometimes seen.

(iv) 5*A*/*Clb. Dry Teak Forest.*

This forest type forms part of the lower reaches of the Kalakad Reserved Forest just above the thorn forest. Where biotic intereference is less, the upper canopy is almots closed. It is formed by a mixture of trees practically all of which are deciduous during the dry season. Climbers are almost inconspicuous but for a few woody climbers. Ferns and Epiphytes are conspicuously absent. The majority of the tree species occurring in this type coppice freely when felled.

Locality factos—The forests receive an annual rain fall or 900 to 1300 mm. mostly from North-East moonsoon. The soil is shallow or porous or clayey. This forest is charatearised by recurring annual fires in dry months. The grazing incidence is also very heavy The floristic composition is given below:—

Top Canopy. Tectona grandis, Anogeissus latifolia Pterocarpus marsupium, Phyll anthus emblica, Bredelia retusa. Occassionally *Terminalia paniculata, Terminalia cranulata, Gmelina arborea are seen.*

Second Sforey :—Cassia fistula, Wrightia tinctoria, Canthium dicoccum, Chloroxylon swietenia, Premna and *n. Diospyros.*

Undergrowth :—Lantana, Dodonea viscosa, Zizyphus pecies, *Catissia* species, *Cassia auriculata, Nyctonthus arbotustics* , *Hrelicteres isora* are also seen.

Grass :—Themida triandra, Heleropogon contortess, Dcanthium species, *Aristida repens, Ergrostis* species.

Climbers are rarely found except some woody climbers. Epiphytes are usually absent. Bamboos are rarely found.

(v) 5*A*/*C*3—*Southern Dry Mixed Deciduous Forests* :

This type occurs along the foot hills and outermost slopes upto an elevation of 300 metres. Soil is extremely hard and shallow with numerous rocky and bouldery out crops. Biotic influences by way of heavy grazing, frequent fires and feeling has been severely felf. The annual rainfall is about 75 cm. to 100 cm. and is chiefly from the North-east monsoon between October and January leaving the rest of the year practically dry. The trees are leafless for half the year exposing the ground to scorching sun. In rainy season when the trees are in full foliage a deceptive appearance is created of a well managed useful forest. The general height of the trees is not more than 10 metres. The area where this type of forest occurs has been worked for fuel and in most of the series two rotation are over leaving the forest devoid of timber or fuel species.

Species :—Azadirachta indica, Tamarindus indica, Albizzia amara, Albizzia lebbeck, Acacia ferruginea, Acacia sundra, Givotia rouleriformis, Zizyphus species *Anogeissus laifolia, Terminalia chebula, Pterocarpus Marsupium, Chloroxylon swietenia, Gyrocarpus americanus, Morinda tinctoria, Acacia suma, Ficus bengalensis, Semecarpus anacardium, Hymenodictym excelsum, Spindus emarginatus, Dalbergia Paniculata, Protium cardatum, Balsamodendeon berryi, Dichrostachys cinerea, Acacia leucophloea, Eugenia jambolana, Careya arborea, Pyllanthus emblica, Hardwickia binata.*

Under Wood :—Mellotus philippinensis, Strublesasper, Grewia asiatica, Erythroxylon monogynum, Webera corymbosa, Santalum album, Strychnos potatorum, Gmelina asistica, Randia dumetorum, Capparis species, *Dalbergia multiflora, Carissa spinarum, Ixora parviflora.*

Teak Tract.—In the above area which lies in the foot hills of Kalakad and Sivagiri a thick growth of teak of a stunted variety which attains a maximum height of 7 metres and 15 cms. in diameter occurs. Coppice shoots of this Teak attain this height in 5 to 10 years and thereafter stagnate. The leaves are usually smaller, elliptic ovate with a slight wavy margin, acuminate tip a silvery glabrous under surface and distinct petiole of 7 to 10 cms. Unlike in other tracts in this region the leaves begin to fall in March -April and new leaves appear in August-September. Strangely it comes into flower in December-January when the conventional Teak is with ripe fruits falling to the ground. Fruits ripen in April-May. In some places this Teak forms 75 to 80 per cent of the crop. Natural regeneration of this teak is very unsatisfactory as immediately after the felling a dense mass of weeds and climbers cover the area choking the seedlings. Repeated fires and indisciriminiate cutting along with over grazing has brought about the retrogression.

(vi) 8*A*/*E*1—*Ochlandra Reed Brakes* :

In the higher reaches of the forests especially between Sengalteri and Netarikal along the perrenial streams "Reed Brakes" containing unpenetrable thickets 3 to 5 metres high with scattered overwood of evergreen trees are the characteristics of this vegetation. Three species of reeds namely *Ochlandra travancorica*, *Ochlandra rheedii* and *Ochlandra brandissii*, characterise this forest type under the top canop of *Vernonia monosis*, *Eugenia* species and *Palaquium ellipticum*.

Singampatti Ex-Zamin Forests.

53. The most valuable part of this ex-zamin forest as already mentioned in paragraph 31 containing luxuriant growth has been leased out to Bombay Burmah Trading Corporation. In amajor portion of this leased area plantation crops like Tea and Coffee have been raised and the remaining area which contains natural growth is being clear felled for raising Tea. That portion of the Singampatty Ex-Zamin Forest situated in Tirunelveli South Division is a vast extent of 10,797.83 ha. (26,682 acres) lying north of Kalakad Reserved Forest and south of Manimuthar river. The forest type seen here are :

(i) 1A/CA—West Coast Tropical Evergreen Forest.
(ii) 2A/C3—Tirunelveli Semi Evergreen Forest.
(iii) 3B/C2—Southern Moist Mixed Deciduous Forest.
(iv) 5A/C3—Southern Dry Mixed Deciduous Forest.

The descriptions of the above type of forests are the same as in Kalakad Reserved Forest.

Kolundumamalai, Manpothai and Therkku Veeravanallur Reserved Forests.

54. The type of forests seen in the above Reserved Forests is 6A/C2 Carnatic Umbrella thorn forest. The annual rainfall varies from 50 cms. to 70 cms. and, the bulk the rainfall coming in October-November. This is an open thron forest with Acacias forming the major species of which Acacia planifrons is the predominant species.,

Floristcs—*Acacia planifrons*, *Acacia latronums Zizyphus xylophyra*, *Albizzia amara*, *Dichrostachy cinerea*, *Azadirachta indica*, *Hardwickia binata*, *Zizyphus* species, *Proeium cardatum* and *Dalbergia mutliflora*.

Under Storey—*Carissa carandus*, *Randia dumatorum* and *Cassia auriculata*.

The above forest due to over grazing and injuries by man are in a process of retrogression and may reach 6A/DSI type.

Kurumalai, Chalikulam, Sivalaperi, Vallanad, Muthur and Gangaikondan Reserved Forests.

55. The forests in the above reserves can be classified Southern Thorn Scrub 6A/DSI type.

The forests have been subjected to overgrazing and over felling. The throny Acacias and their associates occur but usually in stunted form. Much of the soil is shallow and bare. *Euphorbia viscosa*, *Cassia auriculata* and *Dalbergia multiflora* are seen.

Kaliyavoor Reserved Forests.

56. The type of forest here can be classified under *Carnatic Umbrella* Thorn Forest 6A/C2 but also supports fairly good number of other species like *Azadirachra indica*, *Tamarindus indica*, *Palmyrah*, *Acacia leucophloea* and few *Swietenia macrophylla* trees.

Melapattam, Thalayuthu and Karadikulam Reserve Forests.

57. Practically there are no trees in these forests. So no forest classification is possible.

Kudiraimozhi Teri Reserved Forests.

58. Very open and irregular formation of stunted trees and bushes covering only a small portion of the soil. The vegetation is of Xerophytic type. The species naturally occurring are *Acacias*, *Borassus flabullifer*, *Dalbergia multiflora*, *Dodonea viscosa* and *Cassia auriculata* apart from *Azadirachta indica*, *Anacardium occidentale*, *Lannea grandis*, *Albizzia lebbeck* and *Eucaleptus hybrid*. A general description is given in paragraph 5. A suitable classification is not found in Champion and Seth but the natural vegetation comes closer to 6B/ISI.

SECTION 2.

INJURIES TO WHICH THE CROP IS LIABLE.

59. *Drought*.—The North-East monsoon usually sets in by the 1st week of October and peters out by mid December, so all the preliminary operations for regeneration in Tirunelveli District should be got completed before October. The timing of this capricious is monsoon rains, its frequency, quantum of rainfall and the total period are unpredictable. Full utilisation of the meagre rainfall by intensive operations is essential for the succeses of the plantations. However partial or total failure of monsoons are common which results in prolonged drought adversely effecting regeneration operations.

60. *Wind*.—Strong westerly winds during May to August cause severe damage to the young seedlings raised artificially in plantations in plain forests by way of disturbing the root system and sometimes even uprootal. This is felt especially in Theri forest and other places where attempts are made to stop wind erosion. Further the desicating winds cause wilting up of young plants when moisture is low. In the dry season the wind helps to spread and intensify forest fires.

61. *Fire*.—Fires are common in the deciduous forest during the dry season killing young regeneration and rendering conditions favourable for the invasion of grass. The fires season in the eastern slopes of ghats is from March to September by destruction of advanced growth and natural regeneration. In Kanyakumari District, the fire season is short from February to April but large areas including plantations are burnt causing scorching of the peripheral trees in the isolated sholas around which vast extents of grass land are seen. The fire is mainly due to incendiarism by the hill tribes, graziers, minor forest produce collectors and owners of registered land holdings in the midst of Reserved Forests. It is not easily possible to put down these fires because of limited resources of fire fighting and many fires burn themselves out and go unreported. The statement below gives particulars of fires reported the Division between 1957 to 1974 Compared to the vast areas burnt the figures given below are small percentage of total area affected.

Statement showing the extent of damage done by fires in the Division between 1958–59 to 1973–74.

Year.	*Number of fires during the year.*	*Total area burnt in hectares.*	*Cost of fire production.*	*Estimated damage.*
(1)	(2)	(3)	(4)	(5)
1958–59	31	440.31	..	..
1959–60	22	275.4	682.50	57.00
1960–61	48	338.83	1,233.50	85.00
1961–62	50	361.8	1,508.00	919.00
1962–63	63	431.88	1,292.00	450.00
1963–64	59	269.81	588.75	887.00
1964–65	65	633.94	1,038.00	827.00
1965–66	46	341.56	702.00	323.50
1966–67	44	338.2	741.00	249.00
1967–68	53	213.68	1,174.40	80.00
1968–69	42	153.62	1,317.25	117.00
1969–70	45	172.60	1,644.70	30.00
1970–71	35	211.05	1,563.00	449.00
1971–72	50	230.8	2,868.00	(£) 27,278.44
1972–73	49	237.4	2,745.60	(A)14,569.02
1973–74	39	315.7	8,292.80	(B)36,681.46

1971–72—12 timber logs—3.960 cu.m 3 tonnes fuel and Chittar Rubber Coupes XVIII to XX.	(E) Damage Rs. 27,278.44 Kulasekaram Range.
1972–73—Miscellaneous logs 92.273 cu.m Supply logs 50.544 cu.m Fuel stocks 1174 Numbers.	(A) Damage Rs. 14,569.02 Kulasekaram Range.
1973–74—Timber logs burnt ..	(B) Damage Rs. 36,681.46 Kulasekaram Range.

THE GRAZING REVENUE OBTAINED AND NUMBER OF CATTLE GRAZED IN TIRUNELVELI SOUTH DIVISION FROM 1958–59 TO 1973–74.

Serial number and name of animal.	1958–59			1959–60			1960–61			1961–62		
	Reserved Forest.	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Cows and Bulls	9,390	2,043	..	10,581	2,724	2,398	10,866	3,272	260	10,054	2,582	1,264
2. Sheep	25,635	5,343	..	24,145	14,937	11,116	17,815	14,566	4,090	16,423	12,042	4,438
3. Buffaloes	574	240	..	492	256	161	764	277	82	614	197	..
4. Elephants	21	..	..	..	..	..	..	..	..	..	..	..
5. Other animals	..	..	..	40	..	..	..	..	..	..	..	..
Fees realised in Rupees ..	5,621.20	1,271.91	..	5,798.65	2,601.44	2,013.92	5,236.30	2,704.42	596.80	4,791.26	2,189.04	873.56

Serial number and name of animal.	1962–63			1963–64			1964–65			1965–66		
	Reserved Forest.	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
1. Cows and Bulls	12,058	2,861	3,002	11,391	2,707	4,719	153@ Re. 0.25 10,022@ Re. 0.50	2,162	1,764	9,153	3,916	2,061
2. Sheep	19,918	10,469	2,690	27,758	13,175	16,561	22,407	9,536	9,240	24,538	14,309	10.817
3. Buffaloes	600	222	287	719	295	407	87@ Re. 0.50 687@ Re. 1.00	146	114	729	339	81
4. Elephants	..	..	..	..	..	..	..	..	..	..	..	..
5. Other animals	..	..	..	..	..	..	..	12	..	..	..	
Fees realised in rupees ..	5,710.66	2,082.53	1,215.80	6,538.21	2,405.25	3,370.57	11,381.50	3,617.00	3,306.00	11,440.00	5,874.25	3,815.75

THE GRAZING REVENUE OBTAINED AND NUMBER OF CATTLE GRAZED IN TIRUNELVELI SOUTH DIVISION FROM 1958–59 TO 1973–74.

Serial number and name of animal.	1966–67			967–68			1968–69			1969–70.		
	Reserved Forest.	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*
	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
1 Cows and Bulls ..	9,051	3,449	2,773	9,289	3,103	2,617	10,426	3,009	2,627	11,612	2,908	2,715
2. Sheeps	26,199	15,426	11,403	25,138	12,445	10,875	24,718	12,581	10,455	27,216	11,220	10,350
3. Buffaloes	691	316	185	765	266	232	905	201	230	1,061	334	219
4. Elephants	..	..	..	..	..	..	..	..	..	..	..	..
5 Other animals	..	..	..	..	..	..	..	..	..	..	..	..
6. Fees realised in rupees	11,766.25	5,897.00	4,422.25	11,694.00	4,928.15	4,259.25	12,297.50	4,855.75	4,157.25	13,671.00	4,593.00	4,164.00

Serial number and name of animal.	1970–71			1971–72			1972–73			1973–74			*Remarks.*
	Reserved Forest.	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	*Reserved Forest.*	*Ex-Zamin Forest.*	*Panchayat Forest.*	
	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)
. Cows and bulls ..	8,560	3,408	2,335	10,131	2,730	1,357	7,882	1,345	1,771	10,135	1,696	1,959	..
2. Sheeps	23,383	14,518	9,507	25,716	11,777	6,935	18,332	6,425	7,713	18,795	5,845	7,438	..
3. Buffaloes	775	358	164	637	268	78	529	100	112	749	102	135	..
4. Elephants	4	..	..	5	..	..	7	..	..	2	..	..	..
5. Other animals	..	..	..	..	..	..	5	..	..	..	..	..	..
Fees realised in Rupees ..	10,948.75	5,691.50	3,708.25	24,363.00	9,154.50	980.00	18,196.00	4,757.50	5,851	21,070.50	4,822.50	5,348.00	
Penning Licence	23.00	..	..	..	..	..	..	..	..				

62. *Grazing.*—The bane of this country is its uneconomic useless and decrepit cattle. These cattle get their sustenence at the cost of valuable forests. Unrestricted grazing for the past 3 decades especially in easily accessible areas has caused severe set back in the natural regeneration. The damage caused in the artificial regeneration areas is also heavy. Further they are the carriers of certain diseases like anthrox and rinderpest which at times cause heavy mortality in wildlife. The statement given at the annexure gives particulars of the number of cattle permitted each year in the forests of this division. (The grazing incidence which is arrived at by dividing the total extent of forests open to grazing by the number of cattle will give not a correct picture as most of this cattle seldom go beyond the lower reaches of the hills which means the intensity of grazing is severe).

63. *Man.*—Man is mainly responsible for the destruction of forests through illicit removal of timber, fuel bamboos and other forest produce. Smuggling of timber in the neighbourhood of forest areas in Kanyakumari district has been well organised and developed into a fine art. Hill-tribes cause damage to the forests by felling, lopping and burning down valuable trees for practising shifting cultivation. In this they are helped by the people from the plains who cultivate these lands in the name of these hill-tribes who are called kanis. Encroachments for cultivation in Kanyakumari district cause the most serious damage to the forests. The encroachers unscrupulously destroy the existing growth. including very valuable trees which are even burnt down where there is no change to smuggle them out. This encroachment problem has been tolerated because of the apathy of the Government. The statement below furnishes the nature and extent of forest offences in the division between 1958–59 to 1973–74.

64. *Statement of Forest Offences in Tirunelveli South Forest Division from 1958–59 to 1973–74.*

Year. (1)	*Illicit cutting and or/removal.* (2)	*Illicit grazing.* (3)	*Illicits hoting.* (4)	*Timber transit rules.* (5)	*Miscellaneous.* (6)	*Total.* (7)	*Compounding fees collec ted.* (8)	*Remarks.* (9)
							RS.	
1958–59	366	6	..	..	38	410	3,675.25	..
1959–60	753	60	..	..	7	820	6,356.50	..
1960–61	1,344	174	..	..	2	1,533	6,583.50	..
1961–62	1,097	163	..	..	11	1,271	7,552.00	..
1962–63	1,282	164	..	..	7	1,453	12,146.50	..
1963–64	1,416	163	..	..	46	1,625	11,925.00	..
1964–65	992	129	..	..	85	1,206	14,186.00	..
1965–66	998	93	..	..	45	1,136	20,130.50	..
1966–67	842	58	..	..	238	1,138	21,039.50	..
1967–68	1,035	259	..	..	255	1,549	32,370.00	..
1968–69	645	123	..	..	59	828	23,442.00	..
1969–70	865	73	..	..	28	966	28,820.00	..
1970–71	704	110	..	..	30	844	16,260.50	..
1971–72	947	113	..	..	..	1,060	20,093.00	..
1972–73	987	83	..	..	..	1,070	29,955.00	..
1973–74	834	71	..	..	2	907	51,475.00	..

65. *Animals.*—Wild elephants cause damage in the rubber paIntations and in young regeneration areas where kumari crops are raised. Bamboo patches are their main target. Wild boars also are harmful to younger regenerations. Porcupines, monkeys and rodents consume large quantities of fruits and seeds in sholas and minimise possibilities of regeneration of the species.

66. *Insects.*—The defoliators (Hybalea puera) and skeletenisers (Hapalia machaeralis) of teak casuse some damage to the teak plantations. Termites attack small seedlings and saplings in the nursery and in the plantations. The damage is server in drier regions and this is minimised by application of 25 gms. of 10 per cent Heptachlor aldrin or chlordane dust to the pit just before planting.

67. *Injurious plants.*—Grass is injurious on account of the enhanced fire risk and is directly harmful in removing nutriation and moisture from the surface soil and also preventing direct access of seeds of economic species to the ground.

Lantana, Euphatorium and strobilanthus are widespread and invade large areas.

Creepers and climbers are destructive in regeneration areas as they smother the young plants and construct the bigger ones and thereby check their growth sometimes causing large scale failures. The most harmful are *Pterolobium tindicum*, *Acacia instsia*, *Acacia concinna* and *Acacia pinnata*, *Ziziphus caesalpinna* miniosoides.

SECTION 3.

SHORT NOTE ON WILDLIFE.

69. Wildlife has been disturbed and thrown out of its habitantand its number got reduced byhuman interference by way of construction of hydel projects and large scale conversion of forests into rubber and softwood plantations. Poaching and poisoning have accounted for reduction in number of animals like Tiger, Panther, Black buck and Deer. Inspite of this, still considerable variety of wildlife is seen in the division.

In recent years wildlife conciousness has moved the Government to declares the entire division as prohibited from shooting from 1st April 1968. It is believed that with effective enforcement it will prove good for the vanishing wildlife. The entire Kalakad Reserve has been notified as sanctuary in G.O. Ms. No. 183, Forests and Fisheries, dated 6th March 1976.

69. (a) *Animals, Primates, The Bonnet Macaque* (*Macaca radiata* (*Geoffroy*) is a medium sized, long tailed macaque. A bonnet of hairs rediates in all directions from a whorl on its crown. The hairs cover the forehead, are short and parted in the centre. The coat of the Bonnet Macaque in the cold weather is usually lustorous olive-brown; the underparts whitish and in the hot weather the coat loses its lustre and is a buffy grey. It is found around villages and in open forests. About 200–300 of these have been trapped near Papanasam temple and transported to the Internal Forests around Sengalatheri in 1967–68.

The Lion tiled Macgue [*Macaca silonus* (*Linnaeud*)] can be easily distinguished from all other species of macaques firstly by a great mane of long dark-grey or brownish grey hairs grawing from the temples and cheeks by its glossy black coat and short tail ending in a tuft. This is endemic to Western Ghats. It is found in small troups in shola forests, generally around Manjolai, Kakachi, Nalumukku and Sengaltheri Forests. It is with main object to protect and develop this species that Kalakad Sanctuary has been formed.

The Common Langur or Hanuman Monkey [*Presbytis entellus* (*Dufresne*)].—This is the long limbed, long tailed, blackfaced monkey, seen as much about towns and villages as in forests. Different races are found in the Himalayas Peninsular and southern India and Ceylon differing in size, heaviness of coat and details of colour. It is found in the ghat forests whe ever Nilgiri Langur is met.

The Nilgiri Langur [*Presbytis johni* (*Fishcher*)] is a glossy black or blackish-brown langur with a yellowish brown head. The rump and base of tail are grizzled. Young are jet black. The Lion-tailed Macaque which has almost the same distribution is also black, but is distinctive in its shoter tuft ended tail and the heavy facial tuff of long light hairs framingits face. It is found in Kalakad, Veerapuli, Klamalaif forests. This animal needs special protection against poaching as there is a belief that its flesh has medicinal value.

The Slender Loris (*Loris tardigradus* (*Linnaeus*)] is lean and lanky in appearance. The Limbs are longer and slender, the ears large, the snout pointed; the eyes are close-set. The fur is soft woolly. Its colour varies from dark grey to eartly brown with an enbellishment of silvery airs, the lower parts always much paler. The dark spinal stripe is never strongly pronounced and is sometime absent. Eyes, circled with black or dark brown, Muzzle, white. It is met with in the Dry mixed decidous forests and is nocturnal.These are being caught in for the supposed medicinal property they possess.

(b) *Cats ; Tiger* [*Panthera tigris* (*Linnaeous*)].—The Indian Tiger is a rich-coloured well-stripped animal with a short coat. Individual variation in colour, stripes and markings are great. The tigers, found in Mundanthurai are comparatively smaller in size. Tigers are occassionally seen in Kalakad and Singampatti plateau as well in Asambu and Veerapuli Reserved Forests in Kanayakumari. To protect this animal as well as the Panther which are rare, the Tiger sanctuary has formed in the division.

The Leopard or Panther [*Panthera pardus* (*Linnaeus*)]—A Panther is a sleek short-haired animal with a fulvous or bright fulvous coat marked with small close-set balck rosettes. There is however considerable colour variation. It is comparatively more common and is found all over, even frequently forests adjoining crop fields.

The Jungle Cat (*Felis chus Gujldenstaed*).—With its long legs and comparatively short tail the Jungle Cat has a very distrinctive appearance. It has pale green eyes. The colour of its fur various from sandy grey to yellowish grey. The tail is ringed with black towards the end has a black tip. The paws are pale yellowish, balck or sooty brown underneath. The ears are reddish, ending is a small pencil of black hairs. The underside of the body is paler, with vestings of stripes on the underside and flanks. It is not common but found in open type of forests on elevations up to 600 metres.

Civet—The Small Indian Civet (*Viverricula indica* (*Desmarest*).—A tawny grey or greyish brown animal, lined and streaked on black and croup ; spotted more or less in rows along the flanks. There are usually some cross barks on the neck. It is a fairly common animal snared in agricultural fields for collecting the excretion called " Punugu ".

C. Mongooses.—The Common Mangoose (*Herpestes edwardsi* (*Geoffroy*).—A tawny yellowish-grey mongoose with no stripe on the side of its neck. The alternate light and dark rings on its hairs gives its coat a grizzled ' pepper and salt ' tinge. The tail, which is a long as its body, is tipped with white or yellowish-red, never black. It is very common and almost found all over except in sholas and very moist areas.

The stripped necked Mongoose (*Herpestes vitticollis* (*Bennett*).—The black-neck-stripe reaching backwards from the ear to the shoulder is distinctive in this mongoose. Its coat is grizzled grey, tipped with chestnut-red, the red increasing in intensity on the hindquarters. It shares the same habitant as above but less frequently seen.

(*d*) *Hyena.—The Striped Hyena* (*Hyaena hyaena* (*Liennaus*).—A dog-like build, massive head and fore-body, weak hindquarters, and a heavy dorsal crest of long hairs, sharply defined from the rest of the coat, distinguish the hyena. Its colour varies from cream, buff, or tawny to the grey or dirty white of the harsh scanty summer coat. Transversa stripes on body and limbs are usually well defined. These are the commonest nocturnal scavengers of these forests.

The Jackal (*Canis aureus Linnaeus*).—*The coat is a* mixture of black and white washed with buff about the shoulders, ears, and legs, The Jackal's long-drawn, eerie howling at dusk or just before dawn is perhaps more familiar to most people, than the animal itself. It is common and faced throughout the plain forests.

The Indian Fox Vulpes bengalensis (*Shaw*).—This is a common fox ; a pretty, slender-limbed animal, distinctive in the black tip to its tail. The backs of its ears are generally of the same tone as the head and nape. It is less common.

The Dhole or Indian Wild Dog [*Cuon alpinus* (*Pallas*]. —Much like a domestic dog in general appearance, with the long lanky body of the wolf, but relatively shorter in leg and muzzle. The ears more rounded at the tip and the tail quite bushy. Very distinctive is its red coat, which varies in tone with season and locality. Trans-Himalayan animals are paler, those from the Himalayas are a deeper red, in peninsular India the coat takes on a tawnier tinge. It is fairly common. Till recently they were considered as vermin.

(*e*) *Bear.*—*The Sloth Bear* [*Melursus ursinus* (*Shaw*].—With its elongated muzzle, and lower lip, long unkempt hair and short hind legs, this is easily distinguishable. Most have a whitish V-shaped breast patch, and usually the muzzle and the tips of the feet are dirty white or yellowish. The claws, always longer on the fore-feet are ivory white. The coat may have a brownish tinge, more rarely it is wholly brown. It is found in secluded forests and frequent open forests for feeding.

(*f*) *Otter.*—*The Common Otter* (*Lutra Linnaeus*).—It has a close coat of water proof fur ; a thick muscular tail, paddle like feet and brizzling rigid whiskers and has acquatic habits main food is fish and Fishing Clubs have declared this as a vermin. It had been shot as it was considered a vermin they are now found in hill rivers and in Kodayar Dam fringes.

The Flying Fox (*Pteropus gigantens*).—These are only mammals with wings. Over the framework of arms and hands interfemoral and antebrachial membrane form the wing. These are nocturnal. They are found in the Sengaltheri forests and go out to 3-5 miles during night for feeding.

(*g*) *Squirrels.*—*The Large Brown Flying Squirrel P. P. Phyllippensis* (*Elliot*).—It has a bright chest-nut or bay-coloured coat and salmon-buff underparts. In its summer coat this beautiful squirrel has a bright yellow line down the middle of its deep maroon coat. The body is always darker than the parachute ; tail black-tipped ; under parts rufous. They are rare and found in the forests around the Kodayar and Sengaltheri.

The Indian Giant Squirrel (*Retufa indica*).—It has a body one and a half feet long with a tail of 2 feet with a deep brown and buff coloured coat. It is very common and found in moist deciduous and shola forests wherever there is continuous aereal routes.

The Indian Porcupine (*Hystrix india Kerr*).—Porcupines are recognized by their hair, modified into spines. Other rodents have spines, but never so long or formidable. Its neck and shoulders are crowned with a crest of bristles 6 to 12 inches long. The quills on the back are very profuse. Here the under-armature of short thick quills is more or less hidden by a bristling mantle of longer and thinner spines. Each quill is ornamented with deep brown or black and white rings. The white "rattling quills" on the tail are large and open. It is very common being nocturnal in habits not seen in the day time but its evidences are common almost everywhere.

The Indian Hare (*Lepus nigricollis F. Cuvier*).—The Black-naped Hare (L.n. nigricollis) is distinctive in having a dark brown or black patch on the back of its neck from the ears to the shoulder, upper surface of tail black. It is common and na turnal. It is most commonly seen by headlights in open grassy areas.

Elephant : *The Indian Elephant* (*Elephants maximum Linnaeus*)—The trunk, curious dentition and great size are distinctive character.

Generally only the males have large tusks. The tusks of females scarcely protrude. It is found in moist deciduous and shola forest types.

(i) *Wild Cattle* : *The Gaur, or Indian Bison* (*Bos caurus H. Smith*).—With its huge head, deep massive bady, and sturdy limbs the Gaur is easily distinguished. Very striking in the Gaur is the middle of the back where it ends in an abrupt dip. A newly-born Gaur is a light golden-yellow which soon changes to fawn, then to light brown, and so to coffee or reddish brown, the colour of young bulls and cows. Old bulls are jet black, their bodies almost hairless with ashy forehead and yellowish or white-stockinged feet. It is found in the moist deciduous and shola forests.

Goat : *The Nilgiris Tahr* [*Hemitraqus hylocrius* (*Ogilby*)].—The Nilgiri Tahr has short crisp coat, the rounded outer surface of its horns, and the presence of only a single pair of teats are distinguishing characters.

The general colour of the animal is a dark yellowish brown, paler on the under surface. Does and young bucks are grey. With age the bucks get a very deep brown, almost black, coat with a distinctive light "saddle patch" on the lions. From a distance the saddle looks almost white. In build, bucks are far heavier and stockier than the does.

The horns, almost in contact at the base, rise parallel for some length, then diverge and curve downwards in a hold sweep and are deeply wrinkled. It is found in prescriptions rock faces, especially "variattu mottai" near Winch Point.

(j) *Antelopes* : *The Black Buck or Indian Antelope* : [*Antelope cervicapara* (*Linnaeus*)[.-The Black Buck, the sole representative in India of the genus Antilope has striking colour and beautiful spiralled horns. Its coat when young is yellowish fawn and when 3 years turns dark brown. Horned females are rare. They usually live in open plain forests. They were seen in Kurumalai and Vallanad till a decade back. But now a few are seen in Vallanad only.

(k) *Deer* : *The Sambar*-(*Cervus unicolor Kerr*).—The typical forest deer has coarse and shaggy coat. In stags it forms a mane about the neck and throat. In the hot weather much of the hair is shed. he general colour is brown with a yellowish or greyish tinge. The underparts are paler. Females are lighter in tone. Old stags tend to become very dark, almost black. The antlers are stout and rugged. The brow tine is set at an acute angle with the beam. At its summit, the beam forks into two nearly equal tines. In some head the outer, in others the inner, tine is longer. The full number of points are developed in the fourth year. It is seen in hill forests, not uncommon in Kalakad forests.

The Chital or spotted Deer [*Axis axis* (*Erxleben*] —The Chital is perhaps the most beautiful of all deer. Its coat is bright rufous-fawn profusely spotted with white at all ages and in all seasons. Old bucks are more brownish in colour and darker. The lower series of spots on the flanks are arranged in longitudinal rows. It used to be commonest deer,now found only in few places in the lower slopes of ghats.

The graceful antlers have three tines, a long brow tine set nearly at right angles to the beam and two branch tines at the top. The outer tine, the continuation of the beam is always longer. It may be noted that old bucks often have one or more false points on the brow antler where it joins the main beam.

The Muntjac or Barking Deer [*Muntiacus muntiak Zimmermann*].—The antlers are small, consisting of a short brow-tine and an unbranched beam and are set on bony hair-covered pedicels which extend down each side of the face as bony ridges, hence the name Ribfaced Deer. In does tufts or bristly hair replace the horns. Old males are browner in colour. The upper canines of the males are well developed and are used by the animal in self-defence. It is seen in moist deciduous and dry deciduous forests.

The Indian Chevrotain or Mouse-Deer (*Traqulus memminna*) (*Erxleben*).—TheIndian Chevrotain or Mouse-Deer is a tiny little creature with very slender limbs and high hindquarters. Because of its small size, shy habits, and very protective colouring it easily escapes observation. Its coat is olive-brown minutely speckled with yellow. The flanks are marked with rows of buff or white spots which elongate and pass into longitudinal bands. The lower parts are white. The throat has three white stripes. It has a three chambered stomach and tusks. It is more common in the interior valleys and rivulets.

(*l*) *The Indian Wild Boar* (*Sus scrofa cristatus Linnaeus*) —The colour of the animal is black mixed with grey, rusty brown and white hairs. The young are browner and old boars greyer. New born wild pigs are brown with light or balck stripes. The tushes are well developed in the males. Both the upper and lower tushes curve outwards and project from the mouth. Being prolific is found almost all types of forests in ghats.

(*m*) The Indian Pangolin (Manis Crassicandata Gray) The most distinctive character of a pangolin is its armour of protecting scales. The upper part of the head, the back and sides of the body, the whole tail, and the outside the limbs are covered with large over-lapping scales. In defence the animal curls itself into an armoured ball, exhibiting an enormous muscular power which defies any ordinary attempt to unroll it. The scales of the pangolin may be regarded as hairs or rather spines enormously enlarged and flattered. It is not generally found but leaves its trails on the forest paths.

70. *Birds*: This division contains a variety of Avifauna.

(*a*) The birds commonly seen in deciduous forests are listed below :—

Serial number and common name. (1)	*Scientific name.* (2)
1. The Tree Pie	Dendrocitta vagabunda (Latham)
2. The Jungle Babbler	Turdoides striatus (Dumont)
3. The Gold fronted Chloropsis.	Chloropsis aurifrons (Temminck)
4. The Redvented Bulbul	Pycnonotus cafer (Linnaeus)
5. The Indian Robin	Saxicoloides fulicata (Linnaeus)
6. The Magpie-Robin	Copsychus saularis (Linnaeus)
7. The Grey Shrike	Lanitus excubior (Linnaeus)
8. The Black Drongo	Dicrurus admimilis (Bechstein)
9. The Ashy Wren Warbler	Prinia socialis Sykes.
10. The Golden criole	Oriolus oriolus (Linnaeus)
11. The Brahminy Myna	Sturnus Pagodarum (Gmelin)
12. The Grey Wagtail	Motacilla caspica (Gmelin)
13. The Large Pied Wagtail	Motacilla maderaspatensis (Gmelin)
14. The Black bellied Finch-lark	Eremopterix grisea (Scopoli)
15. The Purple Sunbird	Nectarinia asiatica(Latham)
16. The Pied Crested Cuckoo	Clamator jacobinus (Boddaert)
17. The Crow Pheasant	Centropus sinensis (Stephens)
18. The Alexandrine Parakeet.	Psittacula eupatria (Linneaus)
19. The Roseringed Parakeet.	Psittacula krameri (Scopoli) .
20. The Roller	Coracias benghalensis (Linnaeus)
21. The Common Kingfisher	Alcedo arthis (linnaeus)
22. The Palm Swift	Cypsiurus parvus (Linnaeus)
23. The spotted Owlet	Athene brama (Temminck)
24. The Crested Serpent Eagle.	Spilornis cheela (Latham)
25. The Brahminy Kite	Haliastur indus (Boddaert)
26. The Common Parish Kite.	Milvus kigrans (Boddaert)
27. The Blackwinged Kite	Elanus caeruleus (Desfontains)

Serial number and common name.	Scientific name.
(1)	(2)
28. The Common Green Pigeon	Treron Phoenicoptera (Latham)
29. The spotted Dove ..	Streptopelia chinensis (Scopoli)
30. The Little Brown Dove	Streptepelia senegalensis (Linnaeus)
31. The Common or Grey Quail	Coturnix coturnix (Linnaeus)
32. The Grey Patridge ..	Francolinus pondicerianus (Gmelin)
33. The Redwattled Lapwind	Vanellus indicus (Boddaert)

(*b*) The birds seen in evergreen forests are :—

Serial number and common name.	Scientific name.
(1)	(2)
1. Laughing Thrush .	Garrulax jerdonii
2. Mountain thrush .	Zoothere dauma
3. Large Woodshrike .	Tephrodormis virgatus
4. Fairy Blue Bird .	Irene puella
5. Yellow backed sunbird.	Aethogya siparaja
6. Spider hunter .	Arachnothera longirostries
7. Malabar Golden backed woodpecker	Dinopium javanese
8. Heart spotted woodpeck	Hemicircus canente
9. Malabar Great Black Woodpeck	Dryocopus javansis
10. Nilgiri Speckled Piculet	Picumnus innominatus
11. Blue beared Bee eater .	Nyctyornis atherioni

(*c*) *Water Birds.*—There are quite a number of tanks and a few reservoirs within the division and they harbour variety of water birds. These birds are seen mostly during the period January to June. They are listed below :—

Serial number and common name.	Scientific name.
(1)	(2)
1. Spotted billed or Grey Pelican	Pelecanus philippensis (Gmelin)
2. Little Cormorant .	Phalacrocorax niger (Vieillot)
3. Darter or Snake-bird .	Anhinga rufa (Daudin)
4. Spoonbill .	Platalea leucorodia (Linnaeus)
5. Little Egret .	Egretta garzetta (Linnaeus)
6. Grey Heron .	Ardea cinerea Linnaeus
7. Cattle Egret .	Bubulcus ibis (Linnaeus)
8. Paddy Bird or Pond Heron	Ardeola grayil (Sykes)
9. White Stork ..	Ciconia ciconia (Linnaeus)
10. Painted Stork ..	Ibis leucocephalus(Pennant)
11. Flamingo ..	Phoenicopterus roseus (Pallas)
12. Cotton Teal ..	Nettapus coromandelianus (Gmelin)
13. Little Grebe or Dabchick	Podiceps ruficollis (Pallas)
14. Common Teal ..	Anas crecca (Linnaeus)

Egrets are seen throughout the year in large numbers all over the division, especially, in Tirunelveli D

Two village viz. Kundakulam and Moonradaippu have come into prominence because of the nesting of these water birds in the trees during the period January to May. The birds get their feeds from the neighbouring tanks. There are only a few trees in these villages and the birds population is so much that there is very little spare space left out and the congestion is much too much. The birds have been protected by the villagers themselves and the Government has declared these two places as sanctuaries.

There are a few tanks wherein the water birds are commonly seen in large numbers and it has been proposed to declare these tanks as water birds refuges.

71. *Fishes.*—The reservoir abound with a great varieig of fishes the rearing of which is handled by the Fisheries Department. Cutla, Labeo, Mahseer and Car fish are some of the fishes reared. The fishes in the tanks get harvested each year when they dry up.

72. *Reptilia.*—The rat snakes are frequently met with in the forests. Python and cobra are also seen in the jungles.

73. *Tiger sanctuary.*—The entire Papanasam Reserved Forest and the Singampatty Ex-Zamin Forests was closed for shooting of wild animals and birds and treated as the Sancuary for Tiger (G.O. Ms. No. 2556, Food and Agriculture Department, dated 2nd June 1962).

(2) *Tree sanctuary.*—In G.O. Ms. No. 3367, Food and Agriculture Department, dated 12th November 1963, it is declared that the period commencing from 1st November and ending with the 31st August following (both days inclusive) to be a closed time throughout the areas comprising Kundakulam and Moonradaippu villages and then surroundings to a width of 35 kilometres in Nanguneri taluk of Tirunelveli district in respect of Painted storks.

(3) In G.O. Ms. No. 3074, Food and Agriculture Department, dated 14th October 1963 it is declared that the period commencing on the 1st of October and ending with 30th of April following (both days inclusive) to be a closed time within a radius of 16 kilometres from Gangaikondan Lake in Tirunelveli district in respect of the following birds :—

1. Teals
2. Cormorants
3. Storks
4. Pelicans
5. Sandpipers
6. Ducks
7. Pintails
8. Egrets

74. *Wild Life Preservation Association.*—It is heartening to note that Wildlife Preservation Association has started functioning in Tirunelveli. It is doing geoman's service in the cause of protection of wildlife and dissimination of this knowledge. Further public consciousness on the importance of wild life is also brought about by its various activities.The Forest Department in co-operation with this association can do much to improve the wild life.

Though the Association is meant to cover both Tirunelveli and Kanyakumari districts its activities are mostly confrmed to Tirunelveli district.

CHAPTER III.

UTILISATION OF THE PRODUCE

SECTION 1.

AGRICULTURAL CUSTOMS AND WANTS OF THE POPULATION.

75. Agriculture is the chief occupation of the people in this division. Paddy, Tapioca, Cocoanut and Arecanut are the important crops in Kanyakumari district and in Tirunelveli district. Paddy is grown in areas where irrigation facilities are available and in the rest of the area dry crops are raised. Palmyrah occupies a sizable portion in the Tirunelveli district. Plantations of coffee, tea pepper, rubber and plantains are occur in hill slopes. Almost every bit of land is capable of yielding some crop or other in Kanyakumari district because of the favourable rainfall. Tirunelveli district suffers by contrast without adequate rainfall and with limited irrigation facilities. Land holding seems to be concentrated in the hands of few rich and the majority of the people seem poor inspite of plenty around especially in Kanyakumari district with the implementation of land ceiling Act and Prime Minister's 20 point Economic Programme threre may be better distribution of land among the ryots.

76. Many small scale forest based industries are in the division viz., Saw Milling, Furniture making, Match splint manufacturing Electrical accessories. There is a Paper Mill in Charanmahadevi. Also there is a Chip Board Manufacturing Unit in Rajapalayam for which raw material is supplied from this division.

77. *Wants of the people.*—The requirements of the people are :

(i) Timber for construction, industry and export ;

(ii) Small timber for building and agricultural implements ;

(iii) Fuel for domestic consumption and cottage industries like Jaggery making and kilns ;

(iv) Softwood for Match Industry and Chip Board Industries.

(v) Bamboos and reeds for local consumption and for Paper Mill ;

(vi) Thorns for fence ;

(vii) Manure leaves ;

(viii) Thatch grass ;

(ix) Palmyrah for its multifarious uses and

(x) Pasture for cattle.

78. *Timber* :—The demand for timber is mostly for house construction and furniture making. The species sought after is Teak, Rosewood, Terminalia panieulata and Tomentosa, Artocarpus hirsuta, Lagerstroemia lanceolata, Adina cordifolia, Mangifera indica, etc. TANSI and Fisheries Departments require timber. The former under take manufacture of furniture and other house hold articles and the fisheries department for making of catamarans. The fisheries department require Bombax malabaricum, Ilanthus malabaricum and Albizzia falcata for their purpose whereas the TANSI is particular of teak and rosewood only. Furniture making and manufacture of wooden casings for wall plugs, switch boards and other accessories required for electrical fittings are flourish especially in Nagercoil. For this teak log of small girth and even crooked billets and top-ends are in demand. For export big size logs free from defects of Dalbergia latifolia are sought after and they fetch very high price.

79. *Small Timber.*—There is demand for small timber for construction of houses in the villages and for making agricultural implements. For this purpose small size logs of teak, terminalia tomentosa, Pterocarpus marsupium, termainlia paniculata, Artocarpus integrifolia and bamboos are used. For agricultural implements certain species are favoured. The following list shows the species in demand for different implements ;

Plough share .—Mesua ferrea, Grewia tiliaefolia and Teak.

Handle —Teak.

Yoke.—Pterocarpus marsupium, Adina cordifolia Terminalia paniculata, Gmelina arborea and Teak.

Baulks.—Hardwickia binata, Palaquim ellipticum, Acrocarpus fraxinifolius.

Spokes.—Albizzia lebbeck, Albizzia odoratissima, Teak and Grewia tiliaefolia.

Felloes.—Teak.

Wheel box.—Chloroxylon swietenia, Acacia arabica Hardwickia binata.

Shafts.—Palaquim ellipticum, Hardwickia binata.

80. *Fuel.*—Fuel is in great demand especially in towns like Tirunelveli, Palayamkottai, Tuticorin and Nagercoil The demand from villages and rural areas is comparatively less as they manage mainly with palmyra, cotton, castor, cowdung cakes and brushwood of different species found in the waste lands. In recent years the people have found a good source to supplement their requirements of fuel wood in Prosopis juliflora naturally grown profusely in uncultivatable areas. Another source is from tank beds and waste lands where Acacia arabica and Acacia planifrons are found.

81. *Softwood.*—There is demand for Albizzia falcata for making catamarans and dug-outs for use by the fisher men. The matchwood industry needs the wood of Bombax malabaricum, Albizzia falcata, Melia dubia, etc. The needs of this important matchwood industry could not

be met adequately. Of late for manufacture of Chip Board there is a demand for certain specific species like Cullinia excelsa, Calophyllum elatum, Hyristica and Euginia.

82. *Bamboos.*—Bamboos is in great demand for its multifarious uses. It is also utilised by the Paper Mill at Cheranmahadevi but its availability is very limited and is confined to Klamalai and Veerapuli Reserved Forests in Kanyakumari District.

83. *Reeds.*—Reeds are utilised by the Paper Mill at Cheranmahadevi and to a certain extent their requirements are met with from the forests in the higher reaches of the western ghats.

84. *Rubber.*—An extent of nearly 5,000 ha. of forests in Kanyakumari district has been set apart for raising Hevea brazilensis out of which nearly 3,900 ha. have been planted up. The rubber goes to meet the requirements of natural rubber. This area is excluded from the prescriptions of this plan.

85. *Palmyrah.*—Palmyrah supports the livelihood of a large per centage of the population in this division. The tree is useful all through its life from the seedling stage right upto its maturity. Its timber also is widely used for house construction on account of its durability and cheapness. A peculiar system called tree patta is in existence in the division by which about 10,980 trees in the Reserved Forest are given for full enjoyments of the usufructs to about 500 persons. The rest of the palmyrah trees inside the Reserved Forests are given on lease.

86. *Manure leaf.*—The manure leaf demand from agriculturists is great and it is partially met by the issue of permits for removal from the forests on payment of seigniorage. The Principal species are Eupatorium, Mundulia suberosa, Holarrhene antidysentrioa, Calatropis gigantia, etc. but lopping of some tree species like Lannea grandis, Ailanthus emblica, Azadirachta indica, etc. is also common.

87. *Minor Forest Produce.*—The main items of Minor Forest Produce are Honey, Tamarind, Cardamom, Myrobolam, Canes, etc. Rattan is utilised for furniture making and basket weaving locally and the balance is sent outside the division. Cardamom is raised inside the forests in various lease units and is sent outside the district for sale.

Particulars of revenue realised during the period 1958-59 to 1973-74 is appended.

88. *Grazing.*—As is common to the rest of the country the grazing demands for most of the useless scrub cattle is great. The grazing incidence is very heavy especially is easily accessible forest areas adjoining villages. Grazing is regulated by issue of permits and by prohibiting grazing in young regeneration areas and areas wilfully burnt by graziers. But these restrictions are not really effective.

Particulars of number of cattle grazed and revenue realised during the period 1958-59 to 1973-74 is given in paragraph 61.

SECTION 2.

MARKETS AND MARKETABLE PRODUCTS.

89. *Timber.*—Teak and Rosewood are the two timber species which have greatest demand. Rosewood logs of girth 1.85 m. girth and over without any major defects are considered to be of shipment quality and attract buyers from the West Coast who export them abroad where they produce decorative veneers. Apart from these two, other species such as Terminalia paniculata, Terminalia tomentosa, Lagerstroemia lanceolata, Grewia tiliaefolia Artocarpus hirsuta and Albizzia odoratissima have good demand. The numerous timber depots at Nagercoil cater to the local demands and also supply the demands of the nearby districts either as logs or as sawn sizes. The timber obtained in Tirunelveli forests is marketted from Ambasamudram, Tirunelveli and Tuticorin. The Government Timber Depots at Nagercoil and Tirunelveli sell about 6,700 cu.m. and 600 cu.m. respectively each year.

90. *Softwood.*—Melia dubia, Albizzia falcata and Albizzia stipulata are in great demand for catamarans. Further, Match Splint Industry utilises Ailanthus malabarica Alstonia scholaris and Albizzia falcata. The demand is more than the supply which is absorbed locally.

Cullenia excelsa, Eugenia species, Calophyllum elatum, Myristica attenuata, etc. are utilised by the Madras Chip Board Limited, Rajapalayam.

91. *Fuel and small timber.*—All fuel and small timber produce in the divisions in disposed of locally in the rural areas and in the towns like Nagercoil, Thuckalay, Tirunelveli and Palayamcottai. The fuel demands of the people are met not only from the forests but also from private sources, the main species being Acacia arabica, Acacia planifrons and Prosopis juliflora.

92. *Bamboos.*—Very little bamboo occurs in Tirunelveli district and the major portion of the requirements of the people are met from Kanyakumari forests. There is no surplus for taking outside the division.

93. *Rattan.*—Large quantities of rattan are collected from Singampatti, Kalakad and Veerapuli Reserved Forests and about half the quantity is consumed locally for furniture making and baskets. Manufactured articles as well as raw rattan are exported outside the division especially to Trichy, Madras and Coimbatore.

94. *Reeds.*—The reeds occurring in ·Kulasekarami Azhapandiapuram and Nanguneri ranges are exploited and utilised by M/s. Sun Paper Mills at Cheranmahadevi.

95. *Minor Forest Produce.*—The Minor Forest Produce collected in the division is mostly absorbed locally. Cardamum is exported to Bodinayakanuar for sale.

SECTION 3.

LINES OF EXPORT.

96. *General.*—Both the Tirunelveli and Kanyakumar, districts are provided with an excellent net work of roads maintained by the Highways Department. This road system is supplemented by the following metre gauge Railway lines of Southern Railway.

(1) The Tuticorin-Maniyachi line connecting with the port of Tuticorin.

(2) The Tirunelveli-Tiruchendur Branch line.

(3) The Tirunelveli-Virudhunagar line.

(4) The Tirunelveli-Ambasamudram line.

A broad gauge line is being laid from Tirunelveli to Trivandrum passing through Nagercoil.

There are several 1st Class roads running crisis cross in the division. Besides there are other roads maintained by Electricity Board passing through the forests which are helpful for transport of Forest Produce and for inspection.

Forest Roads.—Forest produce is usually transported from the Forest along rough fair weather cart-tracks, to the main public roads leading to important markets. The engineering branch of the department is laying a road from Mudalaruppan to Sengalteri in Kalakad forest. This will be improved to render it suitable for vehicular traffic under Nature Conservation Scheme.

SECTION 4.

METHODS OF EXPLOITATION AND COST.

97. *Fuel and small timber.*—All fuel and small timber is extracted through the agency of Contractors. The methods vary from place to place according tradition availability of labour and the demand for the produce.

The Nanguneri Range where most of the fuel felling series are worked the present wages are as follows :

Felling charges	Rs. 35	per orry load of 4 tonnes.
Transport from stumpsite to loading site	Rs. 35	Do.
Loading charges	Rs. 6	per lorry loa of 4 tonnes.
Unloading charges	Rs. 3	Do.
Transdort by lorry to Fuel Depot (10 to 15 Kms.). ..	Rs. 60	Do.
Transport to Tirunelveli over a distance of 30 Kms.	Rs. 60	per Lorry load of 8 tonnes.

The Contractor works the coupe strip by strip where he fells all the trees except reserved species flush to the ground to enable coppicing. Fuel is billeted into 1 m. length and removed in lorry under the cover of permits. For the brushwood and fuel of small dimension there is great demand and the neighbouring villages remove them in head-load under cover of head-load chits on payment of higher rates than those prescribed in the coupe sale conditions.

98. *Timber.*—Timber extraction is done in Alagiapandiapuram and Kulasekaram ranges. In the coupes to be clear-felled for regeneration all the trees of marketable timber species are enumerated and the serial number of tree is chiselled at two places one at breast height and the other near the base. The girth at breast height is measured and the bole length estimated and the details are recorded in the marking register. After checking, the trees are felled and converted departmentally. The year of felling coupe number, species, tree number (same as enumeration number) and log letter (A, B, C, etc. from the butt end) will be chiselled on each log and hammer marked. They are then dragged to the field depots. From here they are transported by lorries to the Government Sale Depots at Nagercoil or Tirunelveli by private agency on tendered rates and by departmental lorries also under the cover of permits. In the Depots the logs are properly numbered and accounted in the registers and later sold in open auction forming the logs into saleable lots.

The present classification of logs is as follows ;

Species. (1)		*Length in metres.* (2)	*Girth in centimetres.* (3)	*Remarks.* (4)
Teakwood and Rosewood ;				
AL	I	5.00 and above	150 and above	Straight and without defects.
AL	II	Do.	120 to 149	Do.
AL	III	Do.	90 to 119	Do.
AS	I	Below 5.00 but not less than 2.50.	150 and above	Do.
AS	II	Do.	120 to 149	Do.
AS	III	Do.	90 to 119	Do.
B	I	2.50 and above	150 and above	Fairly straight and with minor defects.
B	II	Do.	120 to 149	Do.
B	III	Do.	90 to 119	Do.
C	I	Do.	150 and above	Crooked defective or hollow.
C	II	Do.	120 to 149	Do.
C	III	Do.	90 to 119	Do.
SL	I	Below 2.50 but not less than 1.00.	90 and above	....
SL	II	Below 2.50	60 to 89	....
Teak Poles and Rosewood ;				
TPL	I	9.00 and above	75 to 89	....
	II	Do.	60 to 74	....
	III	Do.	45 to 59	....
	IV	Do.	30 to 44	....
TPM	I	6.00 to 8.95	75 to 89	....
	II	Do.	60 to 74	....
	III	Do.	45 to 59	....
	IV	Do.	30 to 44	....
TPS	I	3.00 to 5.95	75 to 89	....
	II	Do.	60 to 74	....
	III	Do.	45 to 59	..
	IV	Do.	30 to 44	..
TPUS		All length	Below 30	....
Miscellaneous species—				
	I	2.50 and above	125 and above	...
	II	Do.	Below 125	....
SL		Below 2.50	90 and above	..

The rates sanctioned for various operations in the timber extraction are as follows ;—

Serial number and Name of Work.	F.S.R. Item number.	Rate.	Per.
(1)	(2)	(3)	(4)
1 Felling and conversion of timber by saw without removing bark, but ringing of 9 bark at middle for species such as Marudu etc.	3	5.50	M^3
2 Felling and conversion of timber by removing sapwood for species such as Rosewood and Aini.	4	8.50	M^3
3 Dragging the logs from stump site to field depots and stacking	6	8.00	M^3

Soon after the Extraction of Saleable timber the coupe with the left behind top ends and the balance of the standing growth is sold in auction.

99. *Minor Forest Produce.* All times of minor Forest produce, Bamboos, Geeds and softwood for Chip Board are Collected by consumers and contractors.

SECTION 5: PAST AND CURREVT PRICES.

100 Year after year prices of all forest produce have increased along with the increased cost of living. The following Statements given an indication of the past and current price for timber, fuel and bamboo.

SECTION 5.

THE AVERAGE PRICES OBTAINED PER CUBIC METRE FOR MAIN TIMBER SPECIES DURING 1968-69 TO 1973-74 AT NAGERCOIL AND PETTAI DEPOT.

Serial number (1)	Name of Species. (2)	1968-69. (3)	1969-70. (4)	1970-71. (5)	1971-72. (6)	1972-73. (7)	1973-74. (8)
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs
1	Rosewood	690.00	2,534.00	4,705.00	1,978.00	2,260.00	2,558.00
2	Teak	368.00	383.00	438.00	549.00	571.00	739.00
3	Vengai	290.00	274.00	223.00	277.00	381.00	402.00
4	Venteak	225.00	208.00	203.00	238.00	286.00	309.00
5	Themba	232.00	228.00	185.00	204.00	317.00	333.00
6	Maruthy	180.00	177.00	177.00	220.00	299.00	318.00
7	Manjakadambu	289.00	304.00	244.00	303.00	376.00	460.00
8	Aini	308.00	388.00	336.00	390.00	447.00	433.00
9	Kongu	230.00	350.00	332.00	360.00	345.00	463.00
10	Pila	322.00	310.00	249.00	292.00	319.00	320.00
11	Unnam	170.00	139.00	140.00	76.00	..	..

(*b*) THE WHOLE SALE MARKET RATE PER CUBIC METRE FOR MAIN SPECIES OF TIMBER IN NAGERCOIL, TIRUNELVELI SOUTH DIVISION.

Serial number. (1)	Name of Species. (2)	Category. (3)	Specification. (4)	*For period ending.* 6—70 (5)	6—71 (6)	6—72 (7)
1	Teak	Round logs	3m and up x 0.90	385.00	420.00 to 450.00	705.00to 750.00
2	Teak	Sizes	2 m and up	1,050.00	1,260.00 to 1,476.00	1,330.00 to 1,750.00
3	Teak	Planks	Do.	1,200.00	1,750.00 to 2,450.00	1,680.00 to 2,380.00
4	Rosewood	Round logs	3 m and up x 0.90	600.00	600.00 to 700.00	1,750.00 to 1,995.00
5	Rosewood	Planks	2 m and up	925.00	72.00 to 110.00	2,325.00 to 2,675.00
6	Rosewood	Sizes	Do.	..	54.00 to 60.00	2,450.00 to 2,17.0.00
7	Maruthy	Do.	Do.	316.00	250.00 to 280.00	265.00 to 288.00
8	Themba	Do.	Do.	350.00	300.00 to 320.00	300.00 to 325.00
9	Venteak	Do.	Do.	316.00	300.00 to 320.00	305.00 to 325.00
10	Aini	Do.	Do.	350.00	450.00 to 500.00	448.00 to 500.00
11	Vengai	Do.	Do.	250.00	350.00 to 450.00	352.00 to 450.00
12	Mango	Planks	Do.	240.00	350.00 to 420.00	360100 to 385.00

C. LIST OF BAMBOO COUPES FEED IN TIRUNELVELI, SOUTH DIVISION.

Serial number and Name of Unit. (1)	*Range or Location.* (2)	*Year.* (3)	*Remarks.* (4)
			RS. P.
1 Right to cut ; collect and remove Bamboos except columns under 1 year old	Perunchani Coupe I	1959-60 Sold for	10,001.00
2 Do.	Pechiparai Coupe I	Do.	3,500.00
3 Do.	Thadikaran konam Coupe I	Do.	5,011.00
4 Do.	Perunchani Coupe II	1960-61 Sold for	7,005.00
5 Do	Pechiparai Coupe II	Do.	2,051.00
6 Do	Thadikarankonam Coupe II	Do	3,202.00
7 Do.	Perunchani Coupe III	1961-62 Sold for	7,900.00
8 Do	Pechiparai Coupe III	Do.	3,500.00
9 Do.	Thadikarankonam Coupe III	Do	3,201.00
10 Do	Pechiparai Coupe I	1962-63 Sold for	6,901.00
11 Do	Thadikarankonam Coupe I	Do	3,001.00
12 Do	Alagiapandiapuram	1972-73 Sold for	39,901 00
13 Do.	Kulasekaram	1973-74 Sold for	1,30,001.00

D. STATEMENT SHOWING THE QUANTITIES OF FOREST PRODUCE MARKETED IN TIRUNEVELI, SOUTH DIVISION FROM 1958-59 to 1973–74.

Year. (1)	*Timber.* (2)	*Firewood.* (3)	*Sandalwood.* (4)	*Honey.* (5) KGS.	*Teak poles* (6) NUMBERS.
1958–59	65,866.3 cft.	15 tones		....	2,553
1959–60	80,318.7 cft.	290 tonnes		19	4,079
1960–61	1,12,081.5 cft.	1,108 tonnes		54.5	3,008
1961–62	1,15,050.2 cft.	1,530 tonnes	909 lbs. 8 ozs	127	3,119
1962–63	1,98,137.4 cft.	462 tonnes	9 lbs. 6 ozs.	85	5,469
1963–64	11,967.561M^3	13.762m^3	30.87 kgs.	65	16,760
1964–65	18,200.920M^3	109.733 m^3 tonnes	0.025 m^3 tonnes	29	1,59,517
1965–66	13,606.439M^3	129.038 m^3 tonnes	0.015 m^3 tonnes	140	1,05,427
1966–67	6,774.434 M^3	102.30 m^3 tonnes	0.009 M^3 tonnes	153	1,62,073
1967–68	7,912.556 M^3	1,639.824 m^3 tonnes	0.017 m^3 tonnes	179½	38,400
1968–69	5,425.150 M^3	5,147.056 m^3 tonnes	0.011 m^3 tonnes	216½	2,02.000
1969–70	4,624.386 m^3	26.75 tonnes	19.275 kgs.	129	1,13,707
1970–71	6,018.212 m^3	790.5 m^3tonnes	4,619 kgs.	94	1,94,617
1971–72	13,853.438 M^3	14,605.378 m^3	407.300 kgs.	71	1,33,473
1972–73	9,914.334 m^3	22,373.357 m^3	10.850 kgs.	133.8	73,592
1973–74	7,951.967 m^3	4,512.644 m^3	....	3,205	45,820

SlNo	Name of species	1959—60 Area in acres	1959—60 Rates per	1959—60 Yield Timber CFT	1959—60 Yield Fuel TONS	1960—61 Area in acres	1960—61 Rate per	1960—61 Yield Timber TFAKPOSS	1960—61 Yield Fuel TONS	1961—62 Area in acres	1961—62 Rateyer CFT.	1961—62 Yield Timber CFT.	1961—62 Yield Fuell TONS.
1.	Kolundam malai ..	37.00	21.00	..	175	39.00	20.00	..	31	37.00	18.00	..	32
2.	Parivarisurian ..	57.00	46.00	..	244	56.00	75.00	..	300	53.00	87.00	120	252
3.	Padmaneri	53.00	54.89	..	494.5	50.00	82.00	..	300	..	..	..	..
4.	Thirukarangudi ..	38.00	138.08	480	723	44.00	451.00	..	420	41.00	777.00	1,500	1,136
5.	Vadagarai	56.00	50.16	..	419.5	55.00	29.60	..	397	58.00	177.00	1,480	579
6.	Nambikoil	58.00	202.00	..	624	50.00	230.00	..	423	48.00	155.00	..	287.5
7.	Kalakad	103.00	508.00	12,500	1,564	102.00	806.00	71	1,810	86.00	711.00	6,720	3,200
8.	Malayadipudur ..	23.00	72.00	..	143	21.00	80.00	..	65	19.00	32.00	..	46.5
9.	Vallanad		..	..	..	..		..	..	..	..	..	..
10.	Keelamanimuthar ..	94.04	160.00	..	393	99.00	230.00	..	451	..	..	..	..
11.	Panagudy	43.00	100.74	..	384	44.00	136.00	..	295	41.00	128.68	..	193
12.	Arambholy	32.00	111.00	..	204 45 Head loads	45.00	201.00	..	246	34.00	350.00	..	

Sertal number and Nàme of Spectes.	1962–63				1963–64				1964–65			
	Area tn acres.	Raie per.	Yteld.		Area tn acres.	Raie per.	Yteld.		Area tn acres.	Raie per.	Yteld.	
			Ttmber.	Fuel.			Ttmber.	Fuel.			fiTtmber.	Fuel.
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
			CFT.	TONNES.			CFT.	TONNES.			CFT.	TONSNE.
1 Kolundumamalai ..	..	..	..	..	..	..	..	..	33.00	21.00	..	72
2 Parivarisurian	54.00	86.00	..	267	65.00	116.00	..	337	48.00	242.00	..	420
3 Padmaneri	..	..	..	..	55.00	27.00	..	130	54.00	28.00	..	160
									55.00	29.00		171
									52.00	110.00		487
4 Thirukarankudy ..	33.00	425.00	..	1,158	30.00	250.00	..	785	38.00	241.00	..	387.0
5 Vadagarai	60.00	300.00	150	692	63.00	480.00	..	1,037	50.00	277.00	..	858
6 Nambikoil	49.00	165.00	..	318	63.00	80.00	..	318	..	..	..	..
7 Kalakad	91.00	421.00	18,000	1,020	104.00	1,101.00	7,050	2,981	86.00	851.00	3,030	2,626
8 Malayadipudur ..	21.00	105.00	..	153.75	22.00	153.00	..	213	23.00	221.00	..	268
9 Vallanad	..	..	..	..	..	..	..	..	..	..	..	..
10 Keelamanimuthar ..	..	..	..	..	82.00	287.00	..	1,139	95.00	168.00	..	1,3375
					103.00	242.00	..	857	119.00	141.00	..	1,0771.5
11 Panagudy	36.00	251.00	..	420	37.00	393.00	..	122	..	..	..	..
12 Aranboly	38.00	301.00	..	361	38.00	370.00	..	478 75	..	..	..	..

Serial number and name of species.	1965-66.				1966-67.				1967-68.			
	Area in acres.	Rate per.	Yield.		Area in acres.	Rate per.	Yield.		Area in acres.	Rate per.	Yield.	
			Timber.	Fuel.			Timber.	Fuel.			Timber.	Fuel.
	(26)	(27)	(78)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
1 Kolundumam ..	51.00	15.00	(Not available).		38.00	17.00	..	76 Tonnes.	..	..	..	..
2 Parivarisurian	56.00	139.00	..	255 Tonnes.	29.00	217.00	..	220 Tonnes.	..	..	..	..
3 Padmaneri	43.00	150.00	..	594.5 Tonnes.	43.00	91.00	..	221 Tonnes.	19.4	150.00	..	188.5 Tonnes.
4 Thirukarangudi ..	46.00	195.00	..	396 Tonnes.	42.00	135.00	..	409 Tonnes. 1,903 Head-Loads.	15.2	400.00	..	363 Tonnes.
5 Vadagarai	46.00	361.00	..	622 Tonnes.	47.00	211.00	1,200 Teak varies.	135 Tonnes.	18.9	880.00	..	159.5 Tonnes.
6 Nambikoil	47.00 45.00	46.00 142.20	..	134Tonnes. 290 Tonnes.	48.00	121.00	..	490 Tonnes.	17.5	450.00	100 cft.	482 Tonnes.
7 Kalakad	85.00	214.00	120 cft.	761 Tonnes	86.00	215.00	3,800 Teak varies.	676 Tonnes.	37.6	1,030.00	5,200 cft	907 Tonnes.
8 Malayadipudur ..	23.00	190.00	..	194.5 Tonnes	24.00	126.00	..	150 Tonnes.	8.6	300.00	..	0.5Tonnes
9 Vallanad	..	..	..	..	..	..	..	..	..	..	..	..
10 Keelamanimuthar ..	119.00	181.00	..	1,628 Tonnes.	107.0	101.00	..	652 Tonnes.	48.3	800.00	..	1,042 Tonnes.
11 Panagudy	..	..	..	..	37.00	241.00	..	400 Tonnes	17.7	1, 402.00	..	141 Tonnes.
12 Aramboly	..	..	..	..	41.00	291.00	..	139 Tonnes 1,841 Head-loads.	15.9	543.00	..	348 Tonnes.

Serial number and Name of species.	1968-69.				1969-70.				1970-71.			
	Area in acres.	Rate per.	Yield. Timber.	Yield. Fuel.	Area in acres.	Rate per.	Yield. Timber.	Yield. Fuel.	Area in acres.	Rate per.	Yield. Timber.	Yield. Fuel.
	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
1 Kolundumamalai ..	..	..	..	..	..	..	..	..	..	..	..	..
2 Parivarisurian	..	..	..	..	..	..	..	..	22.1	30.00	..	42.5 Tonnes.
3 Padmaneri	20.5	402.00	..	2,74 Tonnes.	..	..	..	..	22.0	53.00	..	111.5 Tonnes.
4 Thirukarankudy ..	..	..	..	..	13.0 18.0	550.00 360.95	.. ..	405 Tonnes. 240 Tonnes.	..	..	..	..
5 Vadagarai	22.2	555.00	..	333 Tonnes.	18.5	361.00	..	240 Tonnes.	28.5	344.00	1,500 cft.	795 Tonnes.
6 Nambikoil	13.9	691.00	..	446Tonnes.	17.7	950.00	..	603 Tonnes.	24.4	750.00	..	909 Tonnes.
7 Kalakad	36.4	1,471.75	..	1,174 tonnes.	34'7	12,60.00	16,400 cft.	1,192 Tonnes.	35.1	1,100.00	6 600 cft.	1,036.5 tonnnes
8 Malayadipudur ..	7.9	750.00	..	313 Tonnes.	9.6	312.00	..	164 tonnes.	8.9	227.00	..	119 tonnes.
9 Vallanad	..	..	..	..	..	..	..	..	..	..	..	..
10 Keelamanimuthar ..	33.6	532.00	..	785 Tonnes.	47.9	810.00	..	1,268 tonnes.	56.2	43.00	..	2,448 tonnes.
11 Panagudy	14.8	1,135.95	..	777 Tonnes.	12.6	1,448.00	..	995 tonnes.	11.9	1,221.00	.	592 tonnes.
12 Aramboly	..	..	..	..	..	..	..	..	14.4 14.0	572.00 355.00	.. ..	186 tonnes. 212 tonnes.

Serial number and Name of species.	1971-72.				1972-73				1973-74.			
	Area in acres.	Rate per.	Yield.		Area in acres.	Rate per.	Yield.		Area in acres.	Rate per.	Yield.	
			Timber.	Fuel.			Timber.	Fuel.			Timber.	Fuel.
(1) *cont.*	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)
1 Kolundumamalai ..	..	..	..	..	..	..	..	..	..	..	..	..
2 Parivarisurian	..	..	..	..	..	..	..	..	..	..	..	..
3 Padmaneri	..	..	..	..	..	..	..	..	..	..	..	..
4 Thirukarankudy ..	..	..	..	..	..	..	..	..	..	..	..	..
5 Vadagarai	15.6	785.00	2 Lorry Loads. 5 Lorry Loads Ploes.	93 Lorry loads.	22.4	501.00	....	502 tonnes.	21.7	574.00	3,400 cft.	555 Tonnes
6 Nambikoil	..	..	..	..	..	..	..	..	..	..	..	..
7 Kalakad	33.8	1,891.00—	13,500Poles. 250 cft.	62 Tonnes	39.7	1,256.00	2 Lorry Loads.	561 tonnes.	..	..	..	..
8 Malayadipudur	8.06	265.00	..	127 tonnes.	9.0	61.00	..	49 tonnes	38.4	884.25	..	632 tonnes 76 lorry 4 Loads.
9 Vallanad ..	..	..	..	..	..	..	..	..	..	..	..	..
10 Keelamanimuthar ..	35.9	511.00	..	947 tonnes.	40·9	897.80	..	1,810 tonnes.	39.5	738.00	..	(Not available.
11 Panagudy	11.3	2,018.00	..	715 tonnes.	13·5	655.00	..	735 tonnes.	16.2	678.00	..	786tonnes.
12 Aramboly	..	..	..	..	..	..	..	..	..	..	..	

CHAPTER IV.

STAFF AND LABOUR SUPPLY

SECTION

STAFF.

STAFF AS ON 1ST JANUARY 1975.

101. The Establishment of the Division as on 1st January 1975 is given below :—

Serial number.	Class of Establishment.	District Forest Office.	Tirunelveli Range.	Nanguneri Range.	Alagiapandiapuram Range.	Kulasekaram Range.	Boothapandi Range.	Farm Forest Range.	Timber Extraction Kulasekaram.	Special Range Upper Kodayar.	Timber Depot Nagercoil.	Timber Depot pettai.	Assistant Conservator of Forests, Nagercoil.	Permanent.	Temporary.	Total.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1	District Forest Officer	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	
2	Assistant Conservator of Forests ..	..	..	..	..	..	..	..	.	..	..	..	1	..	1	1	
3	Range Officers	..	1	1	1	1	1	1	1	1	1	1	..	5	5	10	
4	Foresters	..	4	3	5	5	5	8	1	1	2	1	..	14	21	35	
5	Forest Guards	..	14	15	10	18	13	1	1	1	..	..	..	68	5	73	**
6	Watchers	..	11	14	7	5	12	..	..	..	8	3	..	..	..	60	£££
7	Head Clerk	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	
8	Accountant	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	
9	Draughtsman	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	
10	Assistsnts	3	..	..	..	..	..	..	..	..	..	..	..	1	2	3	
11	Juvior Assistants	8	1	1	1	1	1	..	..	..	1	..	..	13	1	14	
12	Steno-typist	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	
13	Typist	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	
1	Tally Clerk	1	..	..	..	..	..	..	..	..	1	1	..	..	3	3	
15	Peons	3	1	1	1	1	1	1	1	..	..	1	1	7	5	12	
16	Office Watchers	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	
17	Lorry Drivers	..	..	..	..	..	..	..	..	..	..	..	3	3	..	3	
18	Cleaners	..	..	..	..	..	..	..	..	..	..	..	3	3	.	3	
19	Jeep Drivers	1	..	..	..	..	..	..	..	..	..	..	1	1	1	3	
20	Mahouts	..	..	..	5	..	..	..	..	..	..	..	..	..	5	5	
21	Kevedis	..	..	..	5	..	..	..	..	..	..	..	..	..	5	5	

££includes Guards at Checkposts.

£££ includes Depot, Bungalow and Reserve Watchers.

The Territorial Staff is distributed to various Ranges as given below :—

Statement showing ihe Ranges, sections and Beais wiih Headquariers of Tirunelveli Souih Division.

Seztal number and name of the Range with headquarters. (1)	*Name of territorial section wtih headquarters.* (2)	*Name of the territovial beai with headquarters.* (3)	*Name of the Foresters post other than territovial with headquarters.* (4)	*Name of ihe post of Forest Guard and Reserve Watchert oiher than territorial with headquarters.* (5)
1 Tirunelveli—Headquarter Palayamkottai.	Palayamkottai—Headquarter Palayamkottai.	(*a*) Vallanad-Headquarter Vallanad.	One Forester, River Fringe Plantations.	3 Forest Guards, River Fringe Plantations.
		(*b*) Manakarai-Headquarter Manakarai.	Srivaikuntam Headquarter Srivaikuntam	
		(*c*) Muthur-Melapattam/Headquarter Palayamkottai.		(*a*) Panankurichi Headquarter Srivaikuntam.
		(*d*) Gangaikondan-Headquarter Thalaiyuthu.		(*b*) Athoor Headquarter Athoor. (*c*) Eral Headquarter Eral.
		(*e*) Sivalaperi Beat (Watcher only)—Headquarter Sivalapuri (attached to Vallanad).		
	Nazareth-Heaqduarter Nazareth.	(*a*) Nazareth-Headquarter Nazareth.		
		(*b*) Kanam Headquarter Poochikadu		
		(*c*) Kachinavilai Headquarter Kachinavilai.		
		(*d*) Kayamoli Headquarter Therikudiruppu.		
		(*e*) Sathankulam Teri Headquarter Idachivilai.		
	Kurumalai-Headquarter Kadambur.	(*a*) Kurumalai Headquarter Uthupatti.		
		(*b*) Chalikulam Headquarter Ottapidaram.		
2 Farm Forestry—Headquarter Palayamkottai	....	....	(*a*) Valliyoor Headquarter Valilyoor	1 Forest Gauard, Abishekhapatti Headquarter Abishekhapatti.
			(*b*) Kalakad Headquarter Kalakad.	
			(*c*) Palayamkottai Headquarter Palayamkottai.	
			(*d*) Samugarengapuram Headquarter Samugarengapuram.	
			(*e*) Manur Headquarter Palayamkottai	
			(*f*) Nanguneri South—Headquarter Nanguneri.	
			(*g*) Nanguneri North Headquarter Nanguneri.	

Serial number and, name of the Range with headquarters,	Name of the territorial section with headquarters.	Name of the territorial beat with headquarters.	Name of the Foresters post other than terriortial with headquarters.	Name of the post of Forest Guard and Reserve Watcher other than territorial with headquarters.
(1)	(2)	(3)	(4)	(5)
3 Nanguneri Headquarter Sivanaperi.	Manimuthar—Headquarter Manimuthar.	(a) Singampatti I Headquarter Manimuthar.	....	(a) 1 Watcher—Rest House. Headquarter Manimuthar.
		(b) Singampatti II—Headquarter Manimuthar.		(b) 1 Forest Gaurd Chaingate, Heap quarterManimuthar.
		(c) Singampatti III Headquarter—Manimuthar.		
		(d) Therkuveeravanallur Headquarter Reddiarpuram.		
		(e) Kolundumamalai Headquarter Cheranmahadevi.		
	Kalakad Headquarter Kalakad.	(a) Padmaneri Headquarter Padmaneri.		
		(b) Vadagarai Headquarter Sivanaperi.		
		(c) Kalakad Headquarter Sivanaperi.		
		(d) Sengaltheri Headquarter Koovapatti.		
		(e) Malayadipudur Headquarter Chidambarapuram.		
	Thirukarangudi	(a) Nambikoil Headquarter Nambiar Site.		
		(b) Valliyoor Headquarter Thirukarangudi.		
		(c) Parivarisurian Headquarter Thirukarangudi.		
		(d) Thirukarangudi Headquarter—Nambiar Site.		
4 Alagiapandiapuram— Headquarter Alagiapandiapuram.	Thadikarankonam Headquarter Thadikarankonam.	(a) Thadikarankonam North— Headquarter Thadikarankonam.	Special Duty.— Headquarter Alagiapandiapuram for Teak Plantations—1 Foresters.	Watch Stations.— (a) Iar Thadikarankonam—2 Forest Guards. Special duty.—
		(b) Thadikarankonam South Headquarter Thadikarankonam,	Headquarter Alagiapandiapuram for Soft-wood Plantation 1 Forester.	(b) Alagiapandiapuram for Teak Plantations—1 Forest Guard.
		(c) Alagiapandiapuram Beat Headquarter Alagiapandiapuram.	Headquarter Alagiapandiapuram for Royal Trees – 1 Forester.	(c) Alagiapandiapuram for Royal Trees – 1 Forest Guard.
		(d) Chellamthuruthi Headquarter Chellamthurithi.	Headquarter Alagiapandiapuram for Elephant—1 Forester.	Mahouts 5 Forest Guard. Kavai Headquarter-Kalikesam—5 Forest Guard.
		(e) Balamore Headquarter Balamore.	Post of Kulasekaram Range for Match-wood Plantations – 1 Forester.	Special Duty Watcher Cloves Headquarter Alagiapandipuram—2 Watchers.

Boothapandy Headquarter, Boothapandy.	Asambu Headquarter, Bhoothapandy.	(a) Asambu —Headquarter: Korathorai. (b) Thadagai– Headquarter: Boothapandy.	*Special Duty* Headquarter Darsanamcope Velimalai Teak Plantations.	1 Forester.	*Special Duty*— Headquarters Darisanamcope Velimalai Teak Plantations.	Forest Guard
	Velimalai Headquarter, Darisanamcope.	(a) Velimalai South– Headquarter: Thovaramkadu.			Casuarina plantations at Kovalam.	1 Watcher.
		(b) Velimalai North– Headquarters: Aramanallur.			Casuarina plantation at Puthenthorai.	1 Watcher
	Aramboly—Headquarter, Aramboli.	(a) Therkumalai East– Headquarters: Aramboly.			*Watch Station*— Aramboly.	2 *Forest Guards.*
		(b) TherkumalaiWest—Headquarters: Aramboly.				
		(c) ArambolyHeadquarter,—Aramboly:				
	Panagudy—Headquarter, Panagudy.	(a) Sivahamiapuram — Headquarters: Panagudy.				
		(b) Panagudy,—Headquarters Panagudy.				
		(c) Rosimiapuram— Headquarters: Panagudy.				
6 Kulasekaram —Headqurter; Kulasekaram.	Kulasekaram —Headquarter, Kulasekaram.	(a) Pechiparai– Headquarter Pechiparai. (b) Kulasekaram— Headquarters, Kulasekaram. (c) Ponamana —Headquarter, Ponmanai.	*Special Duty*— For Softwood Plantations Headquarter,— Kulasekaram	2 Foresters	*Checkposts*— Mecode Headquarters, Chitrancode: Kulasekaram .. Kaliel .. .. Pechiparai .. Arukani	2 Forest Guards. 2 Forest Guards. 2 Forest Guards. 2 Forest Guards. 1 Forest Guard.
	Kaliel —Headquarters: Kaliel ..	(a) Kaliel Headquarter, Kaliel .. (b) Marudamparai Headquarer, Arumuganeri. (c) Muthukul Headquarter, Upper Kodayar.			*Special Duty*— For Softwood Plantations Headquarters, Kulasekaram.	3 Forests Guards.
7. Upper Kodayar– Headquarters Upper Kodayar.		Used in the respective ranges ..	Upper Kodayar Kulasekaram Alagiapandiapuram.	1 Forester 1 Forester. 1 Forester.	Headquarters Upper Kodayar.	1 Forest Guard.
8 Nagercoil Depot, Nagercoil ..			Headquarter, Nagercoil.	2 Foresters ..	Headquarters Nagercoil:	8 Watchers.
9 Pettai Depot, Pettai			Headquarter, Pettai.	1 Forester ..	Headquarter Pettai:	3 Watchers.
10 Timber Extraction —Headquarter: Kulasekaram			Headquarter, Kulasekaram.	1 Forester ..	Headquarter, Kulasekaram:	1 Forest Guard

102. *Addition in Staff.*—During the past plan period (1959-74) the following additional staff have been sanctioned to cope up with the increased load of work. The following statement gives detailed information—.

THE ESTABLISHMENT OF TIRUNELVELI SOUTH DIVISION.

Serial number and class of Establishment. (1)	*As on 1st January 1958.* (2)	*As on 1st January 1975.* (3)	*Difference.* (4)	*Remarks.* (6)
1 District Fort Office ..	1	1	..	
2 Assistant Conservator of Forests	..	1	1	To Assistant District Forest Officer—G.O. No. 3260. Agriculture Department dated 2nd November 1968
3 Rangers	5	10	5	*Ranger* 1—*Upper Kodayar Hydro Electric Scheme.*—Original G. O. No. 3282 Food and Agriculture, dated 29th September 1965. It was continued in G.O. No. 140, Forests and Fisheries Department, dated 10th March 1974. *Ranger* 1—*Farm Forestry.*—G.O. No. 1089. Food and Agriculture, dated 23rd March 1963. It was continued in G.O. No. 196 Forests and Fisheries Department, dated Nil. *Ranger* 1-*Boothapandy Range.*—G.O. No. 627, Forests and Fisheries Department, dated 6th August 1974. *Ranger* 1—*Pettai Timber Depot.*—Original G.O. No. 1411, Food and Agriculture Department, dated 26th April 1963 continued in G.O. No. 158, Forests and Firsheries Department, dated 15th March 1974 *Ranger* 1—*Timber Extraction, Kulasekaran.*—G.O. Ms. No. 637, Agricuture Department, dated 29th February 1972 continued in G.O. No. 158 Forests and Fisheries Department, dated 15th March 1974.
4 Foresters	1'		16	*Forestes* 3—*Upper Kodayar Hydro Electric Scheme*—Original G.O. No 3282, Food and Agriculture Department dated 29th September 1965 continued in G.O. No. 140, Forests and Fisheries Department dated 10th March 1974. *Foresters* 8——*Farm Forestry.*—G.O. No. 1089 Food and Agriculture Department, dated 23rd March 1963 continued in G.O. No. 196, Forests and Fisheries Department, dated Nil. *Foresters* 2—*Matchwood Plantations.*—D. Dis. No 12173-58, G. O. No. 2840, Food and Agricultur. Department dated 16th August 1958 G.O. Ms. No , dated 30th June 1958 Tree posts were made permanent in G.O. Ms. No. 278, Forests and Fiseries Department, dated 13th December 1973. File No. 18264/691 Original, G.O. No. 1484, Agriculture, Department, dated 30th April 1968. Continued in G.O. 217, Forests and Fisheries Department, dated 25th March 1974. *Foresters* 3—*Teak Plantation—G.O. for One Forester*—G.O. Ms. No. 2840. dated 16th August 1958 mad Permanent G.O. No. 278, Forests and Fisheri dated 13th December 1973.

			..	*G. O. for Forester* — Original G. O. No. 16171, Agriculture Department dated 13th May 1968, continued in G. O. No. 193. Forests and Fisheries Deparmen., dated 20th March 1974.
			..	*Forester 1—Timber Extraction kulasekaram*—G. O. Ms. No. 637 Agriculture Department, dated 29th February 1972 continued in G. O. No. 158, Forests and Fisheries Department, dated 15th March 1974.
5 Forest Guarde	19		6	*Forest Guards* 6—Consequent on the introduction of Beat System in Alagiapandiapuram and Kulasekaram Ranges from 1st April 1967. The excess staff, 6 Forest Guards were retreunched.
6 Forest Watchere	52	60	28	These numbers include the Depot and Plantation Watcher. There were watchers previous to 1st April 1967 in the beats of Kulasekaram and Algiapandiapuram Ranges. After the intoduction of beat system the post of Watcher was introduced.
7 Head Clerk	1	1	..	..
8 Accountant	1	1	..	..
9 Drauaghtsman	1	23	1	G. O. Ms. No. 3165, Food and Agriculture Department, dated 18th September 1965.
10 Assistantes	1		2	Due to the increase in works under Form Forestry and Timber Extraction.
				(i) G. O. Ms. No. 196, Foreste and Fisheries Department dated Nil.
				(ii) G. O. Ms. 189, Forests and Fisheries Department, dated 20th March 1974.
11 Steno-typist	..	1	1	G. O. Ms. No. 396, Forests and Fisheries Department, dated 22nd May 1975.
12 Typists	1	1	..	..
13 Tally Clerk	..	1	5	Chief Conservator's No. 25165/74, dated 6th July 1974.
14 Officer Watcher	..	1	1	Temporary Establishment.
15 Lorry Driver	..	2	6	G. O. Ms. No. 278, Forests and Fisheries Department, dated 13th December 1973.
			5	Do.
16 Cleaner	..	9	2	(i) G. O. Ms. No. 3163, Food and Agriculture Department dated 18th Sepember 1965.
17 Jeep Driver	..	2	2	(i) G. O. Ms. No. 189, Forests and Fisheries Department, dated 20th March 1974.
18 Mahout 19 Kavadis	..	5	5	For Capturing elephant and timber extraction

103. *Formation of Boothapandi Range.*—In G.O. Ms. No. 8, dated 3rd January 1974 Boothapandi Range was formed with headquarters at Boothapandi reorganising the existing two ranges into three for better protection and administration of the forests in Kanyakumari District. The allotment of beats and sections was found defective which has been corrected in Government Memo 2994/I G/74, dated 28th May 1974 and 30804/IF/74-1, dated 23rd September 1974. but still confusion prevails and the latest G.O. had not been given effect.

Suggestions for increasing the efficiency of the Division.

104. *Bifurcation of the Division.*—At present the district is unwieldy spreading over 2 revenue districts. There are 5 territorial ranges : 1. Farm Forestry Range, 2. Timber Depots and in addition two Ranges are engaged on special works—Timber extraction and plantation operations. So in all there are 10 units. The District Forest Officer with headquarters at Palayamkottai administers the division with the help of an Assiatant Conservator of Forest at Nagercoil who has no sepatare office.

The District Forest Officer is hard pressed for time in paying attention to the following.—(1) Plantations.—New Plantations raised each year in various places under different schemes ; (ii) Maintenance of older plantations ; (iii) Extraction of Timber ; (iv) Conducting sales in the two timber depots ; (v) Tackle numerous encroachments and litigations ; (vi) Maintenance of public relationship through 2 collectors ; (vii) Attend to office works which has a heavy load of financial transactions and routine correspondence and (viii)Lastly the most important aspect of protection of the forests.

This work load will increase when the new plan comes into force.

Very valuable timber forests and plantations are in Kanyakumari District. Within the forest area there are numerous enclosures and Kani settlements. The protection of these forests from encroachments has defeated successive District Forest Officers who are handicapped without maps and valuable records and permanent demarcation on the ground ; so it is absolutely essential for a District Forest Officer to be at Nagercoil to tackle these problems as the remote control from Palayamkottai is not so effective.

The Division at Nagercoil will have 5 units with 3 territorial ranges, one special range for timber extraction and one timber depot. The District Forest Officer at Palayamkottai will have 2 territorial ranges, 2 Special Ranges 1 Farm Forestry and 1 for River Fring and Canal Bank Plantations and 1 Timber Depot at Pettai. Thus in all there will be 5 units and there will be adequate work load for a District Forest Officer with the increased extent of plantation operations introduced under this plan.

For the reasons and justifications given above the bifurcation of the division is absolutely essential.

Staff required—The additional staff required will be Head Clerk—1 ; Accountant—1 ; Draughtsman—1 ; Tracer—1 ; Assistant—2 ; Junior Assistant—2 ; Steno-typist—1 ; Tally Clerk—2 ; Peons—2 ; Office Watcher—1 ; The post of Assistant Conservator of Forests at Nagercoil will be upgraded to that of Deputy Conservator of Forests.. No extra protective staff is required.

The reallotment af affice staff will be as follows.—

Name of post. (1)	*Tirunelveli Divisio .* (2)	*Nagercoil Division.* (3)
Head Clerk	1	1
Accountant	1	1
Draughtsman	1	2
Tracer	1	..
Assistants	3	2
Junior Assistants	5	5
Steno-typist	1	1
Typist	1	..
Tally Clerk (in-chargeof Records)	1	1
Peons	3	3
Office Watcher	1	1
Jeep Driver	1	1

The Range Officer now at Upper Kodayar will take up the work of River Fringe and Canal Bank Plantations with headquarters at Palayamkottai and the rest of the staff will continue to work where they are.

SECTION 2.

LABOUR SUPPLY

105. *Labour*. There is no difficulty in obtaining unskilled labour for departmental works. All the same the labour is apt to be scarce during the period when regeneration operations are undertaken as it coincides with the season for agricultural operations. For extraction of timber in Kanyakumari skilled labour is available in the near by villages. The Kanis are to be utilised as labour for forestry operations but they confine themselves to their own activities and cultivation, so the labour is mostly drawn from the plains people.

106. *Wages*. The wages have increased considerably over the years due to the high cost of living. Many development schemes undertaken by various other departments paying high wages make it imperative for the upward revision of forest schedule of rates.

CHAPTER V.

PAST SYSTEM OF MANAGEMENT

SECTION 1.

GENERA: HISTORY OF THE FOREST-

107. The past history of the forests of Tirunelveli South Division is dealt with under 3 categories viz :

1. Reserved Forests of Tirunelveli District.

2. The Ex-zamin forests of Tirunelveli District.

3. The forests of Kanyakumari District transferred from Kerala to Tamil Nadu on 1st November 1956 as result of state re-organisation.

1. *Tirunelveli Reserved Forests.*

108. The earliest hostory of the division begins with the Pandiyan rulers who were in possession of the presentl Tirunelveli Ramanathapuram and Madurai District stil the middle of 16th century A.D. when the Naicker dynaty took over. The Naicker rule came to an end with the Mahameddan invansion in 1736 of Chanda Sahib. Latee after a brief period of struggle between the French and the British for mastery over the Presidency this District with the other Carnatic provinces passed on the hands of the British in 1781 with a limited scope. In 1801 the District came under the complete control of the East India Company who appointed Mr. Lushington as their first Collector. No form of control seems to have been exercised by the Indian rulers over the forests since there was no necessity at the time and the forests extended so deep into the plains that travelling from one place another exposed one to robber gangs who used those forests for their habitation and refuge.

109. *Early British period* (1801–1854). For years the forests attracted little attention from the Government as there were too much of them and the tendency was to encourage and extend cultivation. People were given unfettered privilege to cut wood for agricultural implements and fuel in head loads for personal use Timber extracted was taxed but in the absence of any control or supervision it was ineffective. All efforts to enforce any form of control proved fruitless and during the course of 50 years most of the forests in the plains and some in the outer ghats were denuded. The Forests at least caught the attention of the Board of Revenue.

The Jungle Conservancy Period (1854-1866)

110. With a view to halting this unrestricted cutting of trees and to exploiting the forests under a uniform set of rules, the Board of Revenue in circular No. 5497 of 1860 laid down certain principles. According to this, wood for agricultural implements, house construction, etc., and fuel for domestic use were free and could be taken from areas set apart for that ; no fruit tree nor any timber trees exceeding three feet in girth at two feet from ground level nor any reserved tree culd be felled without the permission of officers in charge ; and fuel or timbers for sale could be extracted after paying a prescribed seigniorage fee. Unauthorised cutting and evading to the seigniorage fees were made punishable under the Penal Code. The tax under this system collected by a special staff was kept as "Jungle Conservancy Fund" to be spent on raising fuel plantations close to villages, with the object of meeting eventual scarcity of fuel. This fund was administered by the collector at his discretion. This scheme also did not work wely because it was not through and many of the good timbert species were not included in the list of reserved trees, and the effort to form village plantations was a total failure due, chiefly due to public apathy and poor knotwledge of technique. Again, the entire work of collecting the seigniorage fee was entrusted to the village officer on a commission basis, which is due course defeateds the very object.

111. *Coffee Plantations.*–Between 1840 and 1860, a number of small coffee estates were being laid out on the Nanguneri hills the earliest clearing, the Mahendragiri estate (now part of the Kalakad Reserved Forest) having been made in about 1840. The competition of Travancore Coffee. leaf disease, and the unsuitability of the locality for coffee, all combined to ruin the enterprise. At the time of the Forest Settlement in 1902 the Nanguneri hills contained 27 such estates, some of which had been definitely abandoned while others had a names but no local habitation. These attempts at coffee planting in the hills were responsible for the destruction of considerable area of dense shola forest.

112. *Transition Period* (1865 *to* 1882).—Duringthe period the importance of forest conservation was realised by the Government and Captain Beddome was appointed in 1864 to advice the Collector in forest matters and to organise the '.special Department" in charge of forests. Most of the forests were then claimed as private property by Zamindars and temple mutts. The Kalakad forests were claimed by Thirukarangudy mutt and though the Government disallowed the claim the mutt carried the case to the High Court and the final decision in favour of Government was made in 1909. The whole of the ghat forests of Nanguneri Range ex-. cluding the area claimed by the Singampatti Zamindar. were brought under the conservancy rules and were placed in charge of a Daffedar and three peons under the direct superivision of the Sub-Collector of Cheranmahadevi The unweildy jurisdiction and over work to the staff made the scheme a failure resulting in the appointment in 1866 of captain Fullerton as the 1st District Forest Officer in charge of the Special Department.

113. Credit for organising a Forest Department in the District goes to the then Collector Mr. Puckle. He foresaw the importance of the eatchment areas for the irrigating rivers and the ill-effects brought about by clearing the ghat forests in the name of coffe and tea plantations. So he prohibited charcoal burning and clearing of forests, and regulated grazing and cutting trees for timber or fuel under system of licendes.

114. *Private Forests.*— The problem of the private forests in the division still remained unsolved. The claim most antagonistic to the new reservation policy of Government was that of the Singampatti Zamindar. The Singampatti forests commanded the upper reaches of Tambaraparani and the sources of a number of the affluents of this important river. Inspite of the best efforts of the Government this valuable catchment area was lost to the department. Only after the Estate Abolition Act of 1 48 was enforced, this valuable forest was taken over by the department on 19th February 1152.

115. *Reservation on the plains:*—With the progress of conservation, the demand for fuel and small timber expanded enormously, and in order to relieve the pressure on the ghat forests, a scheme for the development and reservation of tree growth in the plains was taken up in 1871. The immediate object in view was to supply fuel to the South Indian Railway, and therefore a start was made with five blocks of waste land near Palayamko t t The scheme of plantation failed owing mainly to a lack of knowledge of the silviculture and technique of planting. of the local species. The project was therefore, abandoned.

116. *Tank Beds.*—Attention was next diverted on the various tank beds of the district containing good tnatural growth of Acacia nilotica, Acacia planifrons and Prosopis spicigera. In 1876 there were about18,500 acres of fuel growth ; this was put under the charge of Mr. Lowry, a Sub-Assistant Conservator. However' from the every beginning there was a lot of differences between the forest officer and the revenue ifficials with reference to restrictions over grazing and felling timber for agricultural implements ; and this resulted in transferring the control to the revenue department under G.O. No. 112, dated 27th January 1982. Later, attempts were made by the Forest Department to constitutte these tank beds also into reserve forests ; but proterts from the people and the Revenue Department put an end to the proposal for ever. Till todate, these tank bedare under the complete cootrol and supervisioorevenu officers who occasionally consult the Forest Department to assess the value of standing trees ; and of late, frequent thefts and difficulty to protect the trees have resulted in early and quick sale of the trees. Grazing continues to be free.

117. *The Forest Committee* (1878–1882) :—In the ghat forests the old system of allowing ryots to take free fuel and small timber and to graze cattle with the Tahildar's permission was in vogue. In course of time this arrangement also deteriorated, prosecutions generally failed with the result illicit cutting was on the increase. To overcome this, Mr. Puckle cut a boundary line between the lower slopes and the rest of the forests during settlement, so that the lower slopes could serve as " " village forests " for the people to take teheir requirements from, while the portion above the line could serve as protected forests where free cutting and grazing were prohibited. This can be called as the first attempt to constitute a reserved forest and the boundry line, then called as " cairns line ", forms the reserve boundary of today.

118. By about this time, the devastating effect great floods of 1877 set the authorities to further examine the need for forest concservation. Damage to roads, bridges and tanks alone was over 115 lakhs of rupees besides the loss of crops, buildings, etc. In 1878 Col. Beddome and the Collector Mr. Pennington drew th attention of the Government to the frequent flood caused by the unrestricted cutting of forests and exten-sive clearing made in the evergreen forests for coffee and tea estates and strongly advocated that Government should interfere to save the catchment areas and that as a matter of immediatete necessity control over Singampatti Zamin forest was essential. The Board of revenue strongly supported the view of the Collector pointing out that cultivation paying a revenue of Rs. 15 lakhs should be safe-guarded immediately and urged the Government to arm itsel with full powers by passing a Forest Act.

119. Consequently ,in 1878 was constituted a Forest Committee consisting of Mr. Pennington the Collector, Mr. Hayne the District Forest Officer and Col. Campbell Walker to go into the question of reservation and forest policy The Committee'srecommendations were accepted by Government , but not given effect to until the Madras Forest Act was passed in 1882. The recommendations were :—

(i) Mr. Puckles principles of " Cairns line " demarcaring village forests and reserve forests sould be extended to the entire district.

(ii) Out of the total forest area of 559.19 sq.miles in the district 1286.81 sq. miles should be constituted into reserve forest and divided into seven blocks.

(iii) No fresh pattas to be granted in ghat forests.

(iv) Since no right to free grazing existed, pasture to be permitted only on payment.

(v) Control over private forests should be exercised for their conservation.

(vi) Grazing in village forests should be regulated by Collector and District Forest Officer.

120. Dr. Brandis's visist:—In 1882 Dr. Brandis visited the division and in his voluminous report he recommended (i) the protection of ghat forests in order to secure the continuace of water-supply for irrigation on which the prosperity of the ryots depended, (ii) the maintetance of fuel supply and the increase of fodder. With a view to securing the former object, he recommended that no more land whatsoever be alinenated on the ghats for coffee or any other cultivation. He stressed on the necessity of reserving the whole area above the outer line laid down by the Revenue survey as the limit of cultivable land. This redical proposal had the effect of obliterating communal forests proposed by the Forest Committee of 1878, but was defended by Dr. Brandis in the interest of irrigation on the plains. Further it was recognised that a boundry half way up the hills would be difficult to select and maintain, besides incerasing the defficulty of effectively protecting the inner reserves from illicit removals. He suggested that the requirements of villages adjoining of the forests should be as far as possible met from Revenue Waste lands and incases of real hardshbip free pasture and the cutting of fuel and small timber should be restricted to those areas which were outside the blocks set apart for protection. Regarding the subject of fire protection Dr. Brandis attributed the degenerated state of forest more to annual fires than to excessive fellings. He said that the evergreen forests were being eaten into on their edges and the decidiuous forests were kept in an open and stunted conditin young seedling and coppice growth were destroyed and the soil was maintained in a hard and improverished condition. With the object of preventing fires, he advocated that the assistance of persons who graze cattle in the reserves should be secured, shifting cultivation carried out by the hill tribes should be regulated, fire ines should be cleared and burnt round selected blocks of the more valuable forests; private enclosures in the reserves should be clearly demarcated and the owners compelled to keep them clear under Chapter, IV of the Forest Act.

121. Finally an establishment of fire-watchers should be organiszed and recruited principally from the tribes residing in the forest and a portion at least of their remuneration should depend on their success in protecting the ares assigned to them.

122. *Forest Reveue.*—Timber consisting chiefly of Hopea parviflora, Teak, Pterocarpus marsupium, and Vitex altissima, was being extracted at the tuime from the ghat forests' It was felled and converted by the

are into scaotlings and brought down to kalakad depot. by contractors who were paid a fixed rate per cubic foot Fuel and chracoal from the ghat forests were removed on payment of the following rates of seigniorage.

	Head load.			*Cart*	*Load.*	
	RS.	A.	P.	RS.	A.	P.
Junglewood	0	2	0	2	0	0
Firewood	0	0	5	0	6	0
Charcoal	0	1	6	1	8	0

123. Minor Forest Produce was also extracted departmentally at certain rates to be paid to Collectors at prescribed depots, and was sold by tender. Dr. Brandis recommended the continuance of this system of extraction, but favoured the restriction of removals to the areas which were not specially fire protected.

124. His estimate of annual revenue was Rs. 22,000 and the anticipated expenditure according to his prescriptions was Rs. 32,000. Thus a deficit of Rs. 10,000 was his forecast and this was justified because the principal object was to preserve the sources of streams on which the prosperity of the district depended.

125. *The Period of Organisation* (1882-87). —During the five years (1882-86) the work of the staff consisted mainly in the organisation of establishment, fire protection of selected blocks and collection of revenue to meet the expenditure on these items of work. The extraction continue to be under the licence and voucher system with several permit gumasthas and checking stations and protective staff to control and supervise removals. In 1884, Mr. Cherry issued orders that this system should be curtailed and localised and that specially protected. areas were to be worked under selection felling system, by removing mature and badly grown trees and at the same time tending the natural regeneration of valuable species. Valuation surveys of crop on which simple working plans were to be based were also ordered to be made. The Timber Transit Rules were drafted and enforced, Better maps with topographical details were prepared. In 1886, this licence and voucher system was discontinued and departmental working or extraction through agency of responsible contractors was urged. By 1858, unrestricted entry and felling on permit had almost ceased and been replaced by regular fellings under departmental supervision ; even persons permitted to remove headloads of deadwood were required to remove them from the annual coupes.

THE WORKING PLAN ERA (1888-1915).

126. *General*.—The success of the departmental working of the early coppice with standards coupes soon encouraged contractors to come forward to undertake the whole work of extraction and sale of the produce, thus relieving the small staff of a great deal of responsibility and enabling it to concentrate its energies on more important works of reservation and construction of roads and buildings. The system of selling the produce standing was introduced in 1889. With a view to encourage contractors who appeareb to have bid too highly in the past, even lower prices were accepted since 1892.

127. *The First Working Plan*.—From 1891 the system of working areas on principle of sustained yield was introduced and the following decade saw a regular state of working plans covering the greater part of the workable area of the forest. The following table gives a list of such working plans:=

Serial Number. (1)	*Date of sanction.* (2)	*Authority.* (3)	*Name of the Working Circle.* (4)	*Area.* (5)	*Authority.* (6)
1	1897	B. P. No. 378	.. Kalakad	3,264	H. B. Bryant.
2	1901	B. P. No. 274	.. Vallanad	5,087	P. M. Lushington.
3	1901	B. P. No. 250	.. Teri Reserve	13,840	Do.
4	1902	B. P. No. 211	.. Tirukarangudi	2,538	Do.
5	1902	B. P. No. 276	.. Nanguneri	55,677	Do.
6	1902	B. P. No. 292	.. Ottapidaram	616	Do.
7	1902	B. P. No. 295	.. Tirunelveli	..	Do.
8	1903	B. P. No. 286	.. Therkuveeravanallur	5,969	Do.
9	1903	B. P. No. 129	.. Srivaikuntam	..	Do.

128. *Objects of the above working Plans*:—The chief objects of the above plans were :—

(1) To define the areas to be strictly protected with a view to the preservation of water sources.

(2) To regularise in a simple manner the exploitation of timber in the evergreen forests and the higher semi-deciduous forests.

(3) To control grazing :

(4) To arrange systematically for capital expenditure on roads and buildings with a view to the future development of the forests.

(5) To supply the neighbouring population with small timber fuel and charcoal on the principle of a sustained yield.

129. In order to preserve the catchment areas of the more important rivers and streams, boundaries of the higher reaches were well defined and all fellings and grazing were prohibited so as to enable the shola and semi deciduous forest to extend themselves. The more accessible and exploitable girth for vitex altissima was fixed as 6 feet and over while for the other species it was 4½ feet and over and trees were sold standing for a lumpsum. Generally, they followed the principle of one tree per acre. but the marked trees were never properly distributed. The deciduous forests were worked under a modified " coppice with standard " system (the standards had no rotation), the coupes being worked by the department or a contractor. None of the working plan, however anticipated the necessityfor artificial regeneration although all coupes felled coupes were closed to grazing for the first 6 years.

130. Villagers were allowed to graze two bulls and one cow at half rates for every 5 acres owned and for the rest they paid the full fee of 0.12 P. per animal. During the hot season they used to take cattle deep into the forest and pen them ; this in course of time led to the formation of " hill grazing compartments ". The grazing fee was raised to 0.25 P. and then in 1896 was reduced to 0.19 P. for all animals.

131. The District Forest Officers of this period for the old Tirunelveli Division were :

Serial number.	*Name of Office.*	*From*	*To*
(1)	(2)	(3)	(4)
1	Mr. Hayne	1878	1884
2	Mr. Brasier	1884	1891
3	Mr. Thornton	1891	1895
4	Mr. Moss	1895	1895
5	Mr. H. B. Bryant	1895	1899
6	Mr. P. M. Lushington	1899	1903
7	Mr. R. D. Richmond	1st April 1903	15th May 1905
8	Mr. H. O'Neil	16th May 1905	15th August 1905
9	Mr. R. D. Richmond	16th August 1905	17th March 1906
10	Mr. H. O'Neil	18th March 1906	19th March 1906
11	Mr. D. T. Barry	20th March 1906	21st March 1907
12	Mr. R. D. Richmond	22nd March 1907	3rd January 1908
13	Mr. H. A. Latham	4th April 1908	24th March 1910
14	The Treasury Deputy Collector	25th March 1910	28th March 1910
15	Mr. A. B. Myer	29th March 1910	28th April 1910
16	Mr. H.A. Latham	29th April 1910	1st January 1912
17	Mr. D. N. Strathie	2nd January 1912	11th January 1912
18	Mr. A. B. Myer	12th January 1912	21st January 1912
19	Mr. T. P. Peake	22nd January 1912	16th September 1915

132. *Revision of Working Plans* (1917—1959).—By 1915 many of the original working plans expired and new working plans for hitherto unworked areas had to be prepared. Accordingly on 6th September 1917, Mr. J. B. Bobinson was appointed as Working Plan Officer; but unfortunately on 4th February 1919 he was transferred rendering all work done 1½ years at a cost of Rs. 16,000.00 a waste. For the next 5 years also nothing was done until in 1924 the District Forest Officer, Mr. George Venugopal prepared a working plan at short notice. This did not get the sanction of the Chief Conservator of Forests, who, however approved it as a temporary scheme for three years with an order that the District Forest Officer should revise and make it a working plan. Again nothing was done till 1930 when Mr. B. J. Singh the then District Forest Officer prepared the 2nd working plan. Since this also did not get the Chief Conservator's sanction Mr. E. A. Lasrado was appointed as Working Plan Officer on 22nd November 1934 for the old composite Tirunelveli Division. He prepared a 10 year plan which was to expire on 31st March 1944. To revise this plan Mr. V. S. Krishnaswamy was appointed in 1942; but due to want of time he prepared a brief working which was not given effect to. The Chief Conservator of Forests, however, extended the currency of Mr. Lasrado's working plan. Then Mr. B. A. Cariappa who was appointed Working Plan Officer on 12th June 1947 prepare a 15 year plan for the composite Tirunelveli Division.

133. In Cariappa's Plan no prescriptions for the administration of Ex-zamin forests can be found as these forests were taken over by the department only in 1952 whereas he completed the plan in 1948. Although Cariappa's plan was intended for the period April 1949 to March 1964, its revision became necessary in view of the vast changes that happened such as the addition of Ex-zamin forests, addition of the forests in Kanyakumari district and consequent re-organisation of the division. So Thiru S. A. Rahmatullah was appointed as Working Plan Officer in 1956 to prepare the plan for the newly formed Tirunelveli South Division and the plan came into force in April 1954. This should have been revised after 10 years but because of the delay in taking up revision it continued to be followed. The revision of Thiru S. A. Rahmatullah's plan was taken up by Thiru Y. S. Kadakshamani in August 1973.

Serial number and of working Plan Officer.	*From*	*To*
(1)	(2)	(3)
1. Mr. J. C. Robinson	6th September 1917	4th February 1919.
2. Mr. George Venugopal.	1924 ..	1925.
3. Mr. B. J. Singh ..	1930 ..	1932.
4. Mr. E. A. Lasrado	22nd November 1931	25th January 1934.
5. Mr. V. S. Krishnasamy.	1942 ..	1944
6. Mr. B. A. Carippa	12th June 1947 ..	31st October 1948.
7. Mr. S. A. Rahmatullah.	15th November 1958	26th October 1959
8. Mr. Y.S. Kadakshamani.	1st August 1973	31st December 1975

134. *General.*—During the period 1915 to 1930 departmental extraction of timber from evergreen and semi-evergreen forests was undertaken, mostly in those areas which now lie in Tirunelveli North Division. The result of the departmental operation showed that extraction could be undertaken at a profit which would more than cover the regeneration costs. Silviculturally it was demonstrated that in evergreen forests it was not desirable to fell more than three tress per acre, as heavier fellings caused too big gaps in the canopy which was not conducive to the preservation of evergreen character of forests.

135. *Contract agency.*—The success of departmental working encouraged local contractors in 1932 to come forward and to purchase standing trees in the annual coupe; but the bids, in a new enterprise like this, were low The revenue obtained by the sale of standing trees in Sengaltheri Selection Felling Series is given below:—

Year.	*Coupe*	*Area in in acres.*	*Number of tress.*	*Price obtained.*
(1)	(2)	(3)	(4)	(5)
1932	I	33	100	725
1936	I	70	170	871
1937	II and III	134	120	990
1939	IV	62	52	374
1940	V	62	62	392
1941	VI	66	56	336
1942	VII	68	62	450

136. During 1943–44 coupe Nos. VIII, IX and X were all worked departmentally and sleepers, hutting materials and ballis were supplied to defence services. The exact quantity extracted from this series alone is not available.

137. Thus it is seen that all the coupes prescribed for felling in the evergreen timber working circle of Lasrado's plan were worked by 1944. Actually fellings were not restricted to girth classes prescribed, not to the areas specified in the plan, as the main consideration was to supply as much as possible for defence services, with the result very few tress were left for extraction and the forests badly needed rest.

138. *Grazing.*—The need for reducing the grazing incidence by enhancing the grazing fees from 3 annas to 8 annas a cow unit in the interest of forest conservation was first felt early in 1916. The enhanced fees came into forcs from July 1918 in Nanguneri Range and from 1930-31 in Srivaikuntam Range. But from 1st April 1939 the Government uniformly adopted a reduction of 50% in the rates of grazing fees and thus the rates were halved But however in July 1964 the rate was increased to Re 0.50 and again on 1st July 1971 it was raised to Re 1.00 for a cow unit and this rate prevails till to date.

District Forest Officers.—The District Forest Officers of the period under review were:—

Name.	*From*	*To*
(1)	(2)	(3)
1. Mr. D. T. Barry ..	17th September 1915	4th April 1917.
2. Mr. H. W. Woodhouse.	15th April 1917 ..	10th May 1917
3. Mr. D. T. Barry	11th May 1917	17th October 1917.
4. Mr. Habibullah	18th October 1917	26th October 1917.
5. Mr. D. T. Barry	27th October 1917	10th April 1918.
6. Mr. G. C. Robinson	11th April 1918	4th May 1918.
7. Mr. D. T. Barry ..	5th May 1918 ..	1st September 1918.
8. Mr. A. B. Jackson	2nd September 1918	7th November 1918.
9. Mr. D. T. Barry ..	8th November 1918	15th August 1919.
10. Mr. T. Clair ..	16th August 1919 ..	21st September 1919.
11. Mr. S. V. Devadason.	22nd September 1919	22nd October 1919.
12. Mr. W. C. Hot ..	23rd October 1919	31st October 1920.
13. Mr. D.T. Barry ..	1st November 1920	17th May 1921.
14. Mr. George Venugopal.	18th May 1921 ..	28th June 1923.
15. Mr. A. Hanumantha Rao.	29th June 1923	28th September 1923.
16. Mr. George Venugopal.	29th September 1923	11th October 1925.
17. Mr. E. M. Crothers	12th October 1925	10th June 1926.
18. Mr. B. J. Singh ..	11th June 1926	15th October 1926
19. Mr. J.M. Longgrig	16th October 1926	26th July 1928.
20. Mr. N. Thirumurthi	27th July 1928	2nd April 1929.
21. Mr. H. C. Hicks ..	3rd April 1928	4th November 1929.
22. Mr. B. J. Singh	5th November 1929	20th May 1932.
23. Mr. E. A. Lazrado	21st May 1932 ..	20th June 1932.
24. Mr. B. J. Singh	21st June 1932 ..	14th July 1932.
25. Mr. A. A. Khan	15th July 1932	26th February 1933.
26. Mr. N. V. Padmanabhan Pillai.	27th February 1933	25th January 1934
27. Mr. E. A. Lazrado	26th January 1934	2nd November 1934
28. Mr. G.R.F. Williams	3rd November 1934	3rd April 1935.
29. Mr. E. A. Lazrado	4th April 1935	11th November 1935.

Name. (1)	From (2)	To (3)
30. Mr. F. D. Ardhigh	12th November 1935	19th May 1936.
31. Mr. E. A. Lazrado	20th May 1936	28th November 1936.
32. Mr. J. H. Longgrig	21st November 1936	31st December 1936.
33. Mr. E. A. Lazrado	1st January 1937	14th January 1937
34. Mr. H. G. Hicks	15th January 1937	21st May 1937.
35. Mr. E.A. Lazrado	22nd May 1937	24th December 1937
36. Mr. V. G. Darington	25th December 1937	20th September 1938.
37. Mr. N. S. Ghate	21st September 1938	30th January 1939
38. Mr. W. C. Wrench	31st January 1939	30th April 1939
39. Mr. Amirpadsha sahin.	1st May 1939	27th June 1939
40. Mr. S. G. Hicks	28th June 1939	23rd March 1943
41. Mr. H. T. Mathew	24th March 1943	18th April 1944
42. Mr. K. Narayanaswamy.	19th April 1944	8th May 1944
43. Mr. K. T. Mathew	9th May 1944	19th April 1945
44. Mr. U. Vridhachalam.	20th April 1945	19th May 1945
45. Mr. K. T. Mathew	20th May 1945	18th April 1946
46. Mr. K. S. Muddanna	19th April 1945	18th May 1945
47 Mr. K. T. Mathew	19th May 1946	24th June 1947
48. Mr. A. V. Sundaram	24th June 1947	6th September 1948
49. Mr. B.A. Carippa	6th September 1948	26th September 1948
50. Mr. V. C. Sankaranarayana Rao.	26th September 1948	17th May 1949
51. Mr. K.V. Lakshmikanta Rao.	18th May 1949	29th May 1949
52. Mr. C. Sridhara Mannadiar.	30th May 1949	31st August 1949
53. Mr. M. B. Kallappa	1st September 1949	4th July 1950
54. Mr. K. Andiappan	5th July 1950	1st August 1953
55. Mr. P. Narayana Nair.	1st August 1953	10th August 1956
56. Mr. P. Ramachandran.	11th August 1956	17th May 1958.
57. Mr. S. A. Rahmatullah.	18th May 1958	4th June 1958
58. Mr. K. Venkatakrishnan.	5th June 1958	2nd October 1960
59. Mr. P. Padmanabhan	3rd October 1960	9th April 1963
60. Mr. S. Subbarayalu	10th April 1963	17th April 1964
61. Mr. C. T. Appiah	18th April 1964	17th May 1964
62. Mr. T. K. Rajagopalan.	18th May 1964	12th June 1964
63. Mr. C. T. Appiah	13th June 1964	12th July 1964
64. Mr. T. K. Rajagopalan	13th July 1964	16th September 1965
65. Mr. C. T. Appiah	17th October 1965	25th October 1965
66. Mr. T. K. Rajagopalan.	26th October 1965	8th November 1965
67. Mr. P. R. Mohammed Basheer.	8th November 1965	10th June 1966
68. Mr. S. M. A. Aslam	10th June 1966	2nd July 1966
69. Mr. K. M. Gurusamy Gownder.	2nd July 1966	25th July 1966
70. Mr. T. Achaya	25th July 1966	16th January 1967
71. Mr. K M. Gurusamy Gownder.	16th January 1967	31st January 1967
72. Mr. T. Achaya	1st February 1967	20th September 1967
73. Mr. V. M. Narasimhan.	20th September 1967	2nd October 1967
74. Mr. T. Achaya	3rd October 1967	6th February 1969
75. Mr. S. Ramamoorthy.	6th February 1969	2nd April 1969
76. Mr. S. Sankaramoorthy.	2nd April 1969	26th February 1970
77 Mr. K. Paulsamy	27th February 1970	19th October 1970
78. Mr. S. Kondas	19th October 1970	10th May 1972
79. Mr. C. Thankiah	10th May 1972	13th June 1972
80. Mr. C. N. Sundaram.	13th June 1972	7th April 1973
81. Mr. C. Venugopal	7th April 1973	4th July 1974
82. Mr. S. Sivasailam	4th July 1974	

Section 2.

EARLY HISTORY OF SINGAMPATTI FORESTS

139. The founder of Singampatti Zamindari is one Apadhorharana Thevar, who came to the south from Ramanathapuram and took service under Pandyan Rulers. His descendants continued as Poligar or Palayakars till 1801 when the East India Company was entrusted with full administration of Tirunelveli district. During the last decade of nineteenth century when several Government forests were reserved, the problem of private forests like Singampatti remained unsolved. The claim most antagonistic to the new preservation policy of Government was that of Singampatti Zamindar. The Singampatti forests commanded the upper reaches of the Thambarabarani and the sources of the affluents of this important river. The Government was faced with several alternatives (1) to take the forests on lease ; (2) to resort to litigation ; (3) to acquire the property under Land Acquisition Act or (4) to override what was considered the doubtful claims of the Zamindar by assuming the property. As a result of litigation in the High Court the Zamindar was successful in establishing all his claims and this decision was ultimately confirmed by the Privy Council 1893.

140. Since about 1900 the Zamindar was keen on administering his forests under the advice of the Government Forest Officer. The deciduous forests were divided into three felling series. The Kundar, Talayanai and Kanjipiramadam series were worked for fuel and small timber on a rotation of 25 years beginning in 1906-1901, the annual coupe being about 200 acres in the Talayani and about 100 acres in each of the other felling series. The system adopted was the coppice with standards retaining about 15 to 20 standards per acre. This substitution of located fellings for the irregular fellings on permit system previously prevalent was a step in the right direction. In about 1922 however circumstances necessitated raids on the forest property to supplement the income of the Zamindari from forests. Management become the reverse of conservation and the following operations were undertaken :—

(1) Departmental so called "thinning" were done annually whereby all teak poles including old standard were felled systematically over the whole area and were

sold to a contractor as rates varying from Rs. 17.00 to Rs. 18.40 per ton. By this method, within five to a six years all exploitable teak poles had been practically cleared out from the decidouous forests, except on steep slops and hill tops where extraction was not remunerative as result, great deffiiculty was experienced in selling the coupes of the three felling series owing to the depletion of the stock through "thinnings".

(2) *The Timber Contract.*—Scantlings of all timber species were permitted to be removed from anywhere in the forests outside the limits of the three fuel series at certain rates stipulated in 1922 and this contract contained till 1933 by which time practically all timber from the accessible areas have been completely removed and much of the shola areas permanently damagec by such a working.

(3) *The Timber Contract of* 1934.—This contract was even more inequitous than the previous one. The period was from 12th September 1934 to 31st July 1936. The lessee was permitted to fell and remove from any place convenient to him in the forests without any restriction from the lessor, any tree over 6 feet in girth at towel feet from the ground level. For any tree less than the girth felled by the lessee, the lessee was to be fined eight annas. Thus a five and a half feet rosewood or teat tree could be felled and removed for eight annas. The lessee had to pay stipulated prices for timber, poles a bamboos, the rates fixed being per cartload. Ands the cubic contents of a cartload were not specified the contractor was free to load upto 40 cft. per cart instead of the normal 20 cft.

(4) The most unsatisfactory contract related to charcoal and was started in 1933. The contractor could burn any amount of charcoal anywhere in the forest and all that he has to do was to pay certain seigniorage fee about two annas per bag of about 180 lbs. which gave wide margin of profit to the contractor. In three years the contractor had felled about 20,000 tonnes of firewood and converted into 4,000 tonnes of charcoal. On the 31st December 1937, the contract was terminated. The very regrettable feature of this contract has been the enormous damage done to the forest by charcoal burners. Due to bad coppicing, many stumps have been killed. Extensive fire caused by their carelessness have ravaged large areas. Owing to the number and size of the kins used, large patches of forests soil have been rendered sterile.

141. *Fuel.*—The estate sold headload and cartload permits for the removal of fuel and deadwood from the forests a six pies and Rs. 2.4.0 respectively per permit. The fact that about Rs. 14,000 was realised from this source in 1935-36 shows the magnitude of the destruction caused.

142. *Bombay-Burma Trading]Corporation Lease.*—On the 12th February 1929 the Zamindar leased out 8,371.57 acres of shola forest on a 99 years lease to this corporation for the growing of plantation products The company paid a premium of Rs. 2,93,075 at Rs 35. per acre and agreed to pay an annual rental of eight annas per acre for the balance. The revenue derived through this source is about Rs. 14,000.00 per year.

143. *Courts of Wards Management.*—When the Zamindar died in 1936, the management of the Estate was entrusted to court of Wards as the heir (grandson) of the late Zamindar was but a child of six years. When court of wards toole over there were debts to the extent of 2.3 lakhs left by the late Zamindar. Since 1936 upto 19th February 1952 when the forests were tansferred to the Forest Department consequent on the Ertates Abolition Act, Court of Wards had been administrating the Estate including the forests and the District Forest Officer, Tirunelveli used in inspect the forests annually and advise the Court of Wards on Forest mattes.

144. *Papanasam Hydro Electric Project* 1942.—Owing to the artificial reservoirs created by two dams in connection with the Hydro-Electric Project 733.06 acres of Singampatty forests got submerged in the lakes. The submerged areas contained some old Teak Plantations.

145. *Manimuthar Reservoir Proect.* As a result of the construction of Manimuthar Project which was completed in 1957, about 635 acres of Singampatti forest were submerged in the reservoir. This area was divided into five coupes and the stading growth was sold before the area was handed over to the Public Works Department.

Administration of Forest under the Court of Wards.

146. As soon as the Court of Wards took over the management the forest was brought under the purview of Section 26 of the Madras Forest Act. The notification was published with Development Department Nos. 207, 208 and 209 of 18th March 1937. (Pages 482–483 of Part I of the Fort St. George Gazette, dated 23rd March 1937). Immediately after this a working scheme for these forests was prepared by Sri E.A. Lasrado which came into force from 1938–39. This plan, keeping in view of the main object to discharge large amounts of debts incurred by the late Zamindar prescribed exploitation of fuel and timber on large scale. The area was divided into five working circles (viz) (1) Timber-cum- Fuel working circle ; (2) Timber working circles; (3) Minor Forest Produce Working Circle; (4) Grszing Working Circle; (5) Cardamom leave working circle.

(i) *Timber-cum-Fuel Working Circle.* Although five felling series were prescribed, two could not be worked from beginning itself as the growth in the series was found to be under five years of age. This left three series, namely Kilnanimuthar, Talayani and Mylar series. After working the first three copues in each series, the district Forest Officers, Tirunelveli inspected the forests in 1940 and suggested that this series should not be worked further becuase the teack stumps were completely exhausted through continuous feeling and majority of the stumps were under 6 inches in girth. So since 1941–42, only series were worked on a 40 years rotation. The clearfelled areas were to be regenerated artificially with teak and rosewood. But the attempts made in 1939 and 1940 were failure ; so later on instead of teak, fuel species like Neem, Vagai, Tamarind was proposed on 'rab' method but this was also failure mainly for want of trained subordinate staff.

(ii) *Timber Working Circle.*—The prescription of the scheme to clear fell the timber growth through contract agency and to plant the area with Teak with the help of the kanis has been followed, The first coupe

10 acres planted in 1939 at 9 feet by 9 feet is very poor plantation. Subsequently the espacement was made close to 6 feet by 6 feet. All these plantations are patchy raised free of cost by kanis with the teak stumps from the District Forest Officer, Tirunelveli. The area marked in Kandamparai valley lies within and at the top of the narrow catchment area. Presumably the need for revenue for the Estate was considered paramount to other considerations.

(iii) *Minor Forest Produce and Grazing.*—The estate ryots had permits to collect their requirements. So the minor forest produce contrector had to sell his permits only to outsiders. This resulted into indiscriminate cutting. Another concession that was allowed was free grants of agricultural implements and machan material. This also caused ruthless cutting of forests as it was not possible to check individual removals. When the forests were under the zamin the grazing rates were 4 annas per sheep, 8 annas per cow and rupees one per buffaloes A concession of 25 per cent on these rates was allowed to Zamin ryots.

147. When these forests were taken over by this-Department in 1952, the forests were in a degraded condition in account of extensive fellings of the past and it was suggested not to fell further coupe but to confine the exploitation to the area to be submerged by the manimuthar Reservoir. Inspite of giving rest to these forest the needs of the public in Singampatti zamin and its surroundings could be still met from the reserved forest of Ambasamudram Range. This proposal to give a 10 years rest to these forests was approved by the Chief Conservator of Forests in his No. 234/53, dated 10th April 1953. The grazing fees were brought down of same rater as in reserved forests and these distinction zamin ryots and outsiders was also abolished with effect from 1953–54 (vide Chief Conservator No. 10001/52, dated 10th September 1953.

148. *Plantations in Singampatti Forests—(i) Kilmani muthar Series.*—In this series 15 coupes of total area-585 acres were felled between 1938 and 1953. Out of these ten acres in each of the first two coupes were regenerated by rab method and the results were poor.

(ii) *Kandamparai Series*:—Out of the fifteen coupes the first seven lie on the eastern side of Melmanimuthar in Kandamparai valley and the remaining eight lie in Chilambu Odai Valley on the western side of the river The following statement shows the details of plantations which lie in Tirunelveli South Division.

Couple number.	*Year.*	*Total area clear-felled.*	*Area plan-ted.*	*Year of plant-ing.*	*Re-marks.*
(1)	(2)	(3)	(4)	(5)	(6)
I ..	1938–39	50	10	1939	..
II ..	1939–40	50	10	1940	..
III ..	1940–41	50	10	1941	..
IV ..	1941–42	50	10	1942	..
V ..	1942–43	50	25	1943	..
VI ..	1943–44	30	25	1944	..
VII ..	1944 45	30	8	1945	..

All the above plantations have been neglected being situated in interior and now can be called a failure, however, a small percent of good trees are avilable in small Patches which can be salv ged.

SECTION 3.

HISTORY OF EX-ETTAYAPURAM. ESTATE FOREST.

149. The Zamindar of Ettayapuram hails from one of the ancient chieftrains of Chandragiri and owned his palayam to the Nayak dynasty who rules Southern India from Madurai. During the last two decades of 19th Century when the East India Company was engaged in subduing the local chieftrains like Veerapandyan Kattabomman and others, this Ettayapuram Zamin was of immence help to the East India Company in annihilation of all opposition. In 1979, Panchalakurichi, the stronghold of Kattabomman Naik,fell and after his execution, a number of his villages and also the forest area now known as Chalykulam forests were presented to Ettayapuram. Thus the forest area of Kurumalai, Chalikulam, Kavadikulam were under the control of the Zamindar till 1954 when in pursuance of the Estate Abolition Act of 1948, these were taken over by the Forest Department. There was some delay, in actually taking over this Zamindari, as the case was before Supreme Court, and it was on 16th October 1954 that actual transfer of these areas to the control of Forest Department took placl Madaliarpatti containing a very a large number palmyrah trees and dense growth of Acacia plainifrons through originally taken over by the Government was finally given to the Zamindar, as it was admitted that this bit of area is a plantation raised by the zamindar, and as such is deemed to be his private property.

150. In 1938, when there was the first popular Ministry in this state, a committee was appointed to go into the details of administration of various Zamindars with a view to abolish this zamindari system. The report of the Estate land Act Committee regarding Ettayapuram in forests is as folows :

> "there are certain forest in the zamindari which are closed ordinary felling of trees, grazing, etc. These forests are worked under the coupe system on commercial lines. Unreserved forests are open to the ryots and free grazing is permitted therein. There are no restrictions as regards grazing except in the case of big tanks where grass is leased on contract during the season. As for fuel and green manure the estate has no restriction but Margosa (Azadirachta indica), Karuvelam (Acacia arabica) and other trees are classified as reserved being valuable timber trees. These should not be felled by ryots according to the Estate authorities. The Dewan has stated that application for free grant of wood for agricultural implements are sanctioned. These facilities are not however granted in what is called as ' reserved forests '. The Dewan has deposed that no special inconvenience or hardship is experienced by ryots and there is generally no prosecution for forest offences. It is to be noted that the so-called reserved forests in the zamin are only formally called so and not reserved under the provisions of the Madras Forest Act. In reserved forests certain fees are levied for fuel, grazing and removal of manure leaves. Ryots felt that the grazing fees are excessive and requested that free grazing might be allowed.

151. While under the control of the zamindar, selected areas were sold as coupes in Kurumalai and Chalykulam occasionally. But there was no continuity of working the coupes on a sustained yield basis. Regeneration of teak and rosewood was attempted in moisit localities. Butit ailed. But it is feiled

152. The right to collect grazing fees were sold in auction annually on a lumpsum contract subject to the conditions that the grazing fees to be levied from graziers should not exceed the rates given below. The grazing rates in force were;—

	RS.	A.	P.S
Buffaloe or cow	1	0	0
Galfs	0	8	0
Goat	1	0	0
Sheep	0	6	0

153. Thus it is seen that only the grazing fees were too high, but even goats were permitted in the ' reservedt forests ' which had been the main cause for the present deteriorated condition of the forests. With these high grazing rates, the grazing revenue was pretty higher, being about Rs. 1,000 rom Karadikulam and Rs. 3,000 from each of the other two bits.

SECTION 4

HISTORY OF THE FOREST IN KANYAKUMARI DISTRICT.

154. As a result of state reorganisation, the four Tamil taluks, namely Vilavankode, Kalkulam, Agastheeswaram and Thovala were trans ferred to Madras State and formed into a separate District known as the Kanyakumari Distict with effect from 1st November 1956. In these four taluks liethethreeRangesofKulasekaram,,Azhagiapandiapuraum and Boothapandi. From ancient times these transferred areas eere better known as Nanjanad and Edanade the former consisting of Agastheeswaram and Thovala taluks and the latter Kalkulam and Vilavancode taluks. This tract had the benefit of the earliest irrigation projects like Pandyan Dam, Puthan Dam (1970) Pachiparai Dam (1907) supplemented by Perunchani (1953). Vast areas of this tractisunderpaddycultivationandtheirprcpseritycepcndse on the regulated supply of water to the above mentiond reservoirs which are fed by Paraliar, Kcdayar and the Palayar all having their source in the reserved forests.

155. Till the beginning of the 19th century, the requirement of the forest produce was not much and teak was the onlymonopolytimberintheTravancore State. People were]ree to fell and remove all other species of timber except teak and they had to pay a nominalriverduty when the timber was transported by water. In 1944 blackwood (Dalbergia latifolia) and Anjini (Artocarpus hirsuta) were also declared monopolies ; and ebony and sandalwood were later on added to the list.

156. Travancore had exported timber and other produce to foreign countries from very remote times. The earliest. customere were the Chinese, the Arabs, the Romansy Subsequently the Danes, the Portugues, Dutch, the Brench and the English succeeded one after another in capturing the market in Travancore.In the middle of 19th centur monopolies were multiplied till almost all important articles were engrossed bythe system. Pepper, Cardamom Ginger, Copra, Chinnamom Arecanuts, Turmeric, Salt Coir, Tobacco, Cotton, Teak, Blackwood Sandalwoor and numerous other articles were brought and sold by the Sirk to derive revenues. There were large ware houses roaby the stateand customs Chowkiswe reinstalled at places on the frontiers.

157. *Origin of the monopolies*:—Animportant characteristic of the early trade of Travancore was the right on monopoly the State exercised over several of its producer The rulers of Travancore owed the idea of monopoly at the Dutch East India Company who impelled by the anxiety to remain masters of the pepper trade in Malabelr introduced the system of monopoly into the country. Dai Jong, Commandant of Cochin in 1757 pointed out that thire system did not exist before the advent of the Dutch. Ths Portuguese obtained it from the Rajahs, who acted only as brokers between the growers and the Protuguese. Whene Competition between European nations arose in the pepper trade, monopolies were introduced, but such u power did not exist in the laws of Cheraman Perumal, by which the rulers of Malabar are bound, and]rom which they cannot deviate, without the consent of their subjeet Though unsupported by sanctions, the system of monopoly was continued by every ruler who had occasion to wield power as it definitely worked to his advantage.Gradually the monopoly right over several articles awere relinqarshed with the currency of free trade.

158. *Forests and early history*:—In the early days s the lands under forests were more extensive than they are now. The growth of population and the resulting demand for more land for eultlvation were rosponsible for reducing the forest to its present area. With the increasing pressure on forests, the necessity fothe consolidated scheme of forest, conservancy was realis.e by the Government ever since the time of Dewan Se M. Madhava Rao. With this object of view, betwein the years 1883 and 1893, the Government passed seria of orders prohbiting the clearing, felling of burnee of forests. Upto 1893 there was on Forest Act,its such in this area and whatever Rules where had ben- on the subject of Forest Conservancy were scattered ig so many proclamations, notifications and circulars than it was not possible to make the public aware of thesd rules. Moreover those rules had no penalties attached to them and forest offences used to be punished under old regulation of 1835 of Travancore State. With the passing of the Madras Forest Act of 1882 It was felt that better provision for the protection and management of the valuable timber forests was necessary Accordingly In April 1884 the Travancore State Govern ment appointed a Committee to consider and report on the Forest Administration in State and its defects and to submit their proposals for its improvement. After holding a number of sitings and taking evidende from a number of witnesses the committee submitted their report in July 1984, and a Draft Regulation was prepayred on the lines of he Madras Forest Act of 1882. In. 1893 the first Forest Regulation of Travancore was passed into law, till then forest land was being freely granted for petmanent cultivation and it was difficult to get conviction of persons accused of forest offences. This regulation of 1893 had been in force till it was substituted by an Aet almost similar and known as the Travancore Cochin Forest Act 1952 as a result of the integration of Cochin State in 1948,

159. *General*:—On account of the large demand oe Teak form foreigne markets the Travancore forests havy attracted the attention of he Timber trade from verd early times, but, the forests of Kanyakumari District which support comparatively less teak and of poorer quality than the west coast, no serious attention was bestowed on hem till about 1915 although the question of exploiting these forests wasensidered eversincee 1890 on account of the large demandfor jungle wood

and evergreen timber for local use in Nanjilnad. It was only in 1896 steps were taken to constitute some of the forests into reserves: before that these forests like most other forests of state remained in a state of being nobody's frrather everybody's property. The extraction of timber or om these forosts passed through different stages from that olden days when each man cut and utilised and whatevre he wanted to Government levying a nominal fee for every tree known as Kuttikanam and finally to the present system of extraction of timber by Government agency and sale in Government depots. A glimpses into the past working of the forests may be obtained from the following extract taken from Mr. Bourdillons report.

160. "At the begining 1884 system as suggested by Forest Commission was introduced. Previously anyone who wanted timber other than royalties and anywTere but near Shencottah had been able to obtain permits at the rate of one rupee per long under which they were allowed to fell and remove the timber at their pleasure. Very little supervision was exercisedover these people,the only check on smuggling being the watch stations which were dotted along the rivers and road sides, but if the permit holders could escape these, they could smuggle as they pleased. Many of the watchers of the watch stations made a good income by passing timber without entering it in their registers". Thus a very small portion of the timber felled ever paid the norminal kuttikanam and the same permits were used several times for different lots of timber. These malpractices were so notorious and so flagrant that Forest Commission reccmmend that the depot system should be introduced and all timber of whatever kind should be brought to the depots for sale. This change however did not bring the desire result in that the villagers had to go a long way off to the Government Depot to get the timber which often did not serve their purposes and in that the felling contractors did as much mischief as the permit holders under the Kuttikanam system. And therefore in 1889 the depot system was abolished and the old seigniorage system was reintroduced.

161. The seignorage system and the depot system when on simultaneously or replacing one another till 1902 when the former was finally abolished with the provision that permits for quantities not exceeding 25 candies coFld bı issued for bonafide domestic use to persons residing close to the forests and far away from the depots. As the work by the felling contractors continued to be un satisfactory in 1900 rules were passed fixing minimum girth for tress to be felled requiring the making of trees-in localised areas, before felling. By that time all the easily workable portions of these forestswereheavily cut particularlythose species like Teak, Rosewood, Petrocarpus marsupium, Terminalia tomentosa, Hopea Parviflora, and Artocarpus hirsuta which were greatly pemand. Under these rules extractionwas continued upto 1914 in Veerapuli Working Circle ; and the annua extraction as about 50,000 cubic feet. l

162. *Working Mlans.*—Although simple form of Workng plan was first conveived by the Munro, the Conservarator of Forests as early as in 1825, the idea of forming degular working plas did not materialse till 1900, when Mr. Bourdillon who ordered the drawing on the simple workingS chemes ona rotation of 6 years. These schemes only served to localise fellings in compact area. They did not visualise a regulated system or take into account the silviculture requirement. These schemes did not work satisfactorily, as coupes opened on 6 years rotation were found too large to be exploited in one year. Ik the Forest Conference held in 1918, it was resolved th4a the preparation of further working plans on an elaborate scale was not necessary in view of the incomplete and unreliable data available then and thatpreparation of simple working schemes was sifficient.

163. Thus the first attempt at systematic working of the forests was made in 1918, with the preparation of the working scheme by Mr. M. P. Jacob. The tract now in Kulasegaram and Azhagiapandiapuram rangs was included in the Veerapuli working circle, with the c bl object of meeting the demand for timber for Nagercoimarket. For convenience, Jacob divided the working circle into 19 annual coupes (i.e.) 19 years being the felling Cycle. An area of 7 square miles of submergible portic*L* in Wachiappara reservoir was treated as a separate coupe, which was being exploited at the time of preparation of the working plan. In Jacob's plan only about 25 per cent of the total forest area was prescribed as available for pexloitations, the remaining area being situated in accessible localities. In revisiong Jacob's report, Sri **Narayana** Iyengar had proposed some more areas and brought the available exploitable area to about 30 per cent of the total area of the reserves, thereby anticipating better yield and higher revenue. He also realised that the demand for firewood for the increasing population of Nanjiland had not been given due considertaion by Jacob, and therefore suggested opening of a fuel series. Ultimately in 1918 when Jacob's plan was approved by the Government, the following modifications were made :—

(1) As large quantity of timber extracted from pechi pari submergible area was lying undisposed in depots, it was considered not binding to work the annual coupes in the years as prescribed by Jacob.

(2) The exploitable girth was raised to 72 inches in the case of all species except Artocarpus hirsuta, Hopea parviflora, Salmalia malabarica, for which 80 inches was prescribed ; and the minimum girth for Grewia tilaefolia, Anogeissus latifolia, Bridelia retusa was fixed as 40 inches.

(3) Jacob's proposal to embark on planting teak on a large scale in Paraliar Valley was considered inexpedient and only 750 acres were set apart for carrying out these planting programme at the rate of 50 acres each year.

(4) As Jacob proposed large areas to be clearfelled and planted with teak annually, he did not make separate provision to meet the demand for firewood. But in view of the restriction placed is modification (3) above, separate coupes had to be prescribed for fuel supply. Accordingly about 3,375 acres in Veerapuli reserve were allotted to a fuel working Circle known as Thadikarankonam fuel series to be worked on a rotation of 25 years, under the coppice with standard system. The concession of free removal of manure leaves and agriculture implements, enjoyed by the villagers of Nanjilnad was to be continued to this Fuel Working Circle.

(5) To repair the damage done by fire in about 35 square miles of Veerapuli reserve intended for timber extraction, more intensive system of cultural operations such as sowing and planting was suggested.

164. *Results of the working Scheme.*—The working scheme was to have come into force in 1916 according to the prescriptions, but on account of various reasons like further amendment, delay in approval of the scheme and dull market conditions, the first coupe was taken up fo extraction in 1921 and the exploitations of different coupes, not in a systematic order-continued upto 1947 Ou tof the 19 coupes in the series, some had been owrned.

once while some other coupes very easily accessible have been gone over again and again. Never was the work in any coupe completed within the stipulated period of one year. The method of working wasto select the easily accessible coupes and to work them for those species of timber commanding a ready sale, without paying attention to the prescriptions of the plan. Improvement fellings and cultural operations were thoroughly ignored. In gaps created by selection fellings grass came up and caused fires. The results of such haphazard work is the present poor stocking in accessible area and the resulting tremendous woody climbers entwining the trees. Much of the submerged area of Perunchani reservoir also came under this series and so large scale extraction of timber and firewood from the submergible portions was undertaken since 1948. Besides timber, the top ends of the fellings were collected and sold to agriculturist at cost price. Though P. T. Davassy in 1953 drew up a working plan, it was neither approved nor enforced. So the position regarding selection felling coupes till the end of 1956 when these areas were trasnferred to Madras State continued to be what has been described above.

Working Planfor Thadik arankonam Fuel Working Cicle.

165. Asthe working Plan of Jacobdid not take adequate provisionto meet the fule demand from Nagercoil Narayana Iyengar prepared this plan in 1918, the object being to supply firewood to Nagercoil. The area of this series is 3375 aeres and lies oneither side of the Thadikarankonam Balamore Road and is within 12 to 18 mile distance from Nagercoil. The silvicultural system prescribed was coppice with standards the number of standards to be left being well formed poles of vauable species, with a rotation of 25, years, 25 coupes were indicated.

166. *Resulis of the Working* .— The first 11 coupes were worked during the year 1916 to 1927 Standards were marked and the remaining growth was sold standing to the Contractor. The working was reviwed in 1930 and the following observation made.

167. The method of coppice with standards is notsuited to this area. This system has ruined the growing stock in the first 11 coupes. All good trees have been felled. leaving inferior once as standards and that in much less number than prescribed. Coppice shoots were very unsatisfactory The coppice shoots in coupe 1 to IV were better than in subsequent coupes.as coppicing incoupes 1 to IV was done departmentally. Morever much damage was caused to the standards during cyclon of 1926. The severe annual fires also acount for the dearth ofregeneration in felled coupes. The results is that there will notbe much to exploit during the next rotation. The reversion to selection felling was strongly advised. This would mean that the simple working scheme of Narayana Iyengar has to be cancelled. The problem of fuel supplyto Nagercoil is to be tackeleds by issuing permits to remve the tops ends of trees felled by Contractors. The first 11 coupes were worked in regular sequence ; but after that the order of working had to be reversed and the coupes were worked backward from the last coupe. Coupe No. XXV for lack of a proper bridge over the Masipatti iver. After the first11 coupes the system adopted was slection felling, by which, marked trees are sold standing Although under selection felling system, only marketable and sound tree were felled. leaving dead, defective and inferior species it was condiæered by the Divisional Forest Officer in 1933 that the selection system was decidedly an improvemen over the coppiece with standards or simple coppice system prescribed by Narayana Iyegnaer The remaining coupes were worked after the Masipatti bridge was constructed in 1935 and the lat coupe Viz. Coupe No. XII in the series was worked in 1940. After that according to the Working Plan coupe I had to go over again,but it contained very few exploitable trees and therefore in1941 it was decided o start teak plantation in this area commencingfrom Coup I. 10.75 acres out of Coupe I were demarcated and sold sanding at Rs. 225.00 per acres. Thus the planting of Teak was started in Azhagiapandipuram Range. Another important prescription of Narayana Iyengar which was ignored as regarding the exploitation of bamboos from these fuel coupes. As the indiscriminate collection of bamboos by permit sytem has ruined the bamboo stock, the plan prescribed that allclumps in the fuel coupe, should be felled departmentally one year before the woring of the coupe for juel and the material sold either in the forest or in the sale depot. But this was never carried out.

168. *Mahendragiri Fuel Coupes.*— The eastern slopes of Mahendragiri reserve facing Panakudi and Aramboli contain predominantly fuel species like Acacia planifros, Tamarind Acaeia sundra, Alibizzia amara Aabout 25 years back attempts were made to sell fuel coues the system adopted being coppice with standards. The price offered were very low owing to the following reasons :—

(1) The reservation of good fuel species as standards restricted the yield from the coupes.

(2) The excise or export duty payable to Travancore State Government, as the produce has necessarily to be taken to the nearest market which is in Madras State. The contractors detected thissystem particularlythe various formalities to be undergone to satisfy the export rules.

(3) Another obstacle intheir way was the lack of proper outlet to the felled produce which has to be carried through private lands in Madras State.

169. When it was pointed out that the retention of standards was unnecessary , the District Forest Officer observedin1933'The Britishforests in Kalakadside cannot be said to be success now.There is no harm in keeping a few, standards and their number of per acre heed not be much". Thus excepting the first two coupes, no other coupe of Mahendragiri fuel serie was sold after 1927. In 1942 the third coupe in the series was sold for Rs. 18 per acre. The coupe was to be clearfelled with the objects of doing 'Rab' regeneration and a start was made in the regeneation of fuel species in Mahendragiri. But this work was discontinued for some unknown reasons.

170. *Bamboos.*— The extraction of bamboos from kthe reserves of Kanyakumari have been far from satisfactory, as the system followed is oone of cutting and removal by the consumers and purchasers on payment of prescribed seigniorates fees.

SECTION 5.

PAST SYSTEM OF MANAGEMENT AND THEIR RESULTS.

Reser ved Forests of Tirunelveli District.

171. *Coppice with standards.*— In the early years of reservation the first object of management was to improve the growing stock and with that object in view, in the earliest coupes, the fellings pertook more of the nature of an improvement fellings only over-mature. unsould and useless and crokked trees being felled and coppied and the bulk of the better grown trees being retained bui

with the passing of years, to meet the increasing demand for revenue to cover expenditure, it become necessary to fella certainpercentage ofsoundtreesalso. When working plans were prepared aname was devised for this system and so it was called 'coppice' with standard" system, but it differes from the true coppice with standards system in that, no standard rotation was prescribed here. In Natguneri Ranges, Kalakad, Vadakarai and Tirukarangudi series were worked onthis system with a rotation of 18 years leaving about 20 to 25 standards per acre.

172. The following were the defects of the system

(i) the task of measuring and marking the standards in many coupes, which were nearly 100 acres each, was too much for the subordinate s of the lower ranks.

(ii) The standards left per acre were ony 15 to 20 per acre and not uniformly distributed.

(iii) Standards were frequently damaged while felling other trees, or were stolen by the lessess. Owing to their sudden isolation and exporsure in the coupe, many of the standards got damaged by wind.

(iv) With such a short rotation of 18 years, there were difficulty for useful growth in the second rotation. The temptation was to leave the younger trees as standards and fell the older standards.

(v) The poor rainfall and soil conditions never allowed the standards to grow to any big size timber, this defeated the very purpose of the system.

(vi) The odds against natural regeneration were in no way less than those under the simple coppice system.

173. After several years it was realised that the primary object of producing timber from the standards was not fulfilled and therefore the coppice with standard system was discontinued when Lasrado revised the plan in 1933.

174. *Simple coppice system.*—All the fuel forests were worked on simple coppice system. Orginally the rotation was 20 years and soon it became evident at the end of the first rotation that twenty years is too short a period for these dry and infertile soils to obtain sufficiently nature stock for a second cutting. Freash areas had to be added to all old felling series with a view to increasing the rotation without reducing the annual areas to be felled,. George Venugopal's Working Scheme presrcribed a rotation of 30 years; and Lasrado's plan prescribed a rotation of 30 years for fuel series and 40 years for the timber-cum-fuel series. Cariappa also adopted the same rotation as Lasrado.

175. Rahmathullah finding serveral coupes without sufficient growth studied the growth rate of the fuel species and decided on a longer rotation of 40 years.

176. Natural regeneration by coppice is a process combined with the working of a coupe; and the job is usually done well by the contractors who have nearly fifty years of experience in this field. However, at times trimming of the stools is postponed to a few days after felling a tree, thus unnecessarily causing a second shock to the stump. Mos of the species coppice welland some like neem,throw out rootsuckers also. Strobilanthes and climbers invad the clear felled area and form a dense mass choking the natural seedlings which in this kind of forest are strong light demanders. The trouble in these forests is not want of seedlings,but the inability of these seedlings to tide over the following summer heat and perhaps a forest fire. The rigors are aggrevated by the hard shallow soil and unreliable monsoon.

177. *Artificial Regeneration.*—Even in 1907, artificial regeneration of the fuel forests was taken up dibbling and broad casting hundreds of pounds of seeds of some 30 improtant species in fuel coupes. This technique did not produce any useful results. Lasardo prescribed artificial regeneration by rab method in felled fuel coupes. This method also failed because it is entirely depended on direct sowing and no transplanting of container plant for entire plant was attempted. In short, the proper techique of dry fuel afforestation was not known. So while revising Lasardo's plan Cariappa thought it is not worthwhile to take up artificial regeneration in these areas and left it to the discretion of the District Forest Officer to raise fuel species by Kumri method where conditions are favourable. An attempt was made to raise neem in Vallioor Reserved Forest by transplanting neem seedlings in 1953 in 1' pits at an espacement of 12' it resulted in failure. In Kolundumamalai Fuel Series the 50 acres plot was afforestated by trench and mound method. It looked promising in the beginning but failed subsequently.

178. *Evergreen Timber Working.*—The earliest working of evergreen forests in the division seems to have been carried on in the sholas of Nanguneri Range from 1897. to 1901. The species extracted were Palaquium elipticum, Mesua ferrea and Bischofia javancia. The Contractor paid on the quantity of timber that he actaully removed to the depot in the plains. In the absence of supervision of fellings it resulted in much wastage and the system was abandoned. Mr. Richmond remarked in 1903 that under this system a contact for a certain number of cubic feet was given to a Contractor who was at liberty to take them from anywhere he liked and more over if he found a tree not suitable after cutting, he rejected it and felled another and so on. It did not matter to him how many trees he destroyed as he paid only on the number of cubbic feet he actually removed. Anything more wasteful it would be difficult to imagine.

179. The next system tried in Karumandiamman Working Circle in Sengalteri, was to sell marked trees standing in located areas (Coupes), payment was to be made in lumpsum for all the trees marked for sale and not to be calculated on the actual outturn. The minimum exploytable girth was fixed at 7 feet at breast height. The felling cycle was 6 years and in each year about 200 trees were marked for sale. The following figures give the result of working the Karumandiamman Working Circle.

Coupes number.	*Area in acres.*	*Possibility trees.*	*Actually extracted trees.*	*Revenue.*
(1)	(2)	(3)	(4)	(5)
Coupes I and II.	438	400	210	436
Do. III	280	200	141	426
Do. IV	561	200	43	160
Do. V	410	200	83	314
Do. VI	499	200	60	536

180. It is obvious that the possibility was fixed too high as sufficient trees above the prescribed girth limit could not be found on the area. The revenue was Re. 0.13.0 per acre or Rs. 3.7-6 per tree felled. In 1904 Mr. **Richmond** had remarked I do not think the system is a good one as it tends to favour bad species which are not cut unless the greatest care is taken in the selection of the trees to be felled, none being marked except those surrounded by or tanding over a well established advance growth of the

same or other valuable species. Again, the prescription that as little demage as possilbe should be done to the surounding forest during felling could not be followed. In view of the importance of these sholas as Protectors of catchment areas of the more important irrigation streams, the possibility of destroying them by exploitation could not be contemplated and ultimately in 1913 all shola exploitation was ordered to be stopped. The discouraging financial results of working is also the cause for this decision.

181. *Defects of this sytem of working* —The principal defects of the shola working alluded to above were that no attempt was made either to encourage what natural regeneration of more valuable species there was on the ground or to supplement such regeneration by artificial means where necessary. This was the problem which was to be solved before shola extraction was started again in 1928.

182. Since 1928 upto 1942 various treatments were given to the evergreen timber forests and all these experiment were confined to areas now in Tirunelveli North Division and a brief account of this is given in paragraphs 179 to 183 of Cariappa's plan. As there was considerable amount of young natural regeneration present in annul coupes, Lasrado prescribed that the canopy be opened over natural seedling and young pole regenereration over an area of at least 25 acres annually in the coupe under exploitation and this is to be done under the personal supervision of a Gazetted Officer. He prescribed also artificial regeneration of gaps either by direct sowing or transplanting seedlings in Chief Conservator of Forests ordered its discontinuance as the natural regeneration of suitable species was lacking. The gap regenaration was stopped as it was not only costly, but also not susceptible to effective check by inspecting officers as the work was scattered over a vast area.

183. In Cariappa's Plan all the evergreen areas were given the much needed rest as they had been over exploited during 1940 to 1944 in meeting the requirement of the defence services.

SECTION 6.

PLANTATIONS RAISED PRIOR TO THIRU RAHMATULLAH'S PLAN.

(A) TIRUNELVELI DISTRICT.

184. *Casuarina.*—Casuarina was first introduced in 1905 in the Valliyur reserve of Nanguneri Range. The plantation (about 6½ acres) was raised at a great cost as it had to be watered for about 6 months in the year and for about 6 years. However, itdied naturally in 1930 and was sold for Rs. 1,500 as fuel the average yield being 12 tons per acre. Lasrado did not prescribe the raising of casuarina probably due to the high cost of watering. The scarcity for fuel in war years made it a necessity to raise Casuarina wherever possible. Casuarina plantations were therefore raised since 1941, in Teri and Valliyur reserves. In Teri where scarcity of water is the limiting factor, the stocking was very poor and this was a failure. In Valliyur from 1941 to 1943, 59 acres were planted with Casuarina at a total cost of Rs. 9,914. From the very beginning there were whole sale casualties owing to the presence of large coarses and in the locality. In 1954 there were 3,850 casuarina trees standing, a good many of which were dead or dying. The Conservator of Fores ordered the sale of these trees and 2,991 dead Casua trees fetched only Rs. 400.

185. *Mahogani.*—Between 1887 and 1889 three acres were planted with Mahogany (Swietenia mahogani an Sweitenia macrophylla) in the Kaliavur reserve. These species were introduced in subsequent years in other areas like Sivalaperi. Koovapatti and Valliyur reserve. Lasrado did not prescribe any planting of Mahogani because he thought this species would not thrive in unfavourable soil condition.

186. *Bamboos.*—The success of planting Bambusa, arundinacea in 1884 in Ambasamudram Range gave a great impetus to raise this species in other areas. In 1903 this species was introduced in Valliyur reserve along the bank of irrigation channel and along the banks of Komba Ar. Attempts were made from 1934 to 1944 to plant bamboo rhizomes in Sengalteri beat along the banks of Moongilpattikidai stream. From 1949 to 1955 this planting activity was continued along the banks of Pachiar, Nambi Ar and Vallyurankal. The older plantations had been raised by three methods, viz., planting out off-sets and planting activity was continued along the banks of Pachiar Nambi Ar. and Vallyurankal and rhizomes one to two years old, have been used in planting and with good results. There had been failures when the planting was belated as the planting time should be so adjusted as to get the maximum benefit from the North-east monsoon which commences in October. The bamboos in Valliyur block and Mungilpattikidai Valley were sold as separate coupes on a three years rotation. These two were sold together in 1944–45, and subsequently the Valliyur block was sold in 1950–51 and 1953–54. In 1953–54, this unit fetched Rs. 2,105. There had been very good bamboo growth along the Vallyurankal till 1953–54 and there was almost gregarious flowering in 1954 and the Conservator of Forests ordered the sale of the flowered bamboos during 1954–55 in order to remove the combustible materials and to protect the natural regeneration noticed by him then. Now excepting a few scattered young bamboo shoots, none of the old clumps is seen here. In Moongilpattikidai Valley the bamboos are not of sufficiently big size and so they have not been sold for want of demand.

187. *Plantations in Kudiraimozhi Teri Reserve.*—From as early as 1848 attempts were made to fix the great masses of shifting sands in the reserve with the object of saving the cultivated lands on the easter edge from being destroyed by the sands blown over by the fierce winds which rage in the area from June to October. At fisst these efforts consisted in encouraging ryots to take blocks of lands on Cowle tenure and to plant up the area gradually with tree growth principally the palmyrah, in conjunction with field crops wherever possible. The response in early years were gratifying and besides palmyrah, Acacia planifrons, Dalbergia multiflora and Dodonea viscosa were sown with ragi and other cereals but the success of the system of penning goats fed on pods of Acacia planifrons in afforesting the sandy areas on the coast led to its adoption in the Teri, but the results owing presumably to the deeper water level and the shifting sands, were disappointing. Private enterprise having thus failed, it was considered necessary to reclalm the area through Government Agency and come, 13,400 acres were reserved in 1892.

188. The details of afforestation works done from 1876–to 1959, are found in paras 175 and 176 of Rahmatullah, plan and are repeated below :—

1	November 1876 ..	13.49 acres Palmyrah..	.. Kudiraimoli Teri Nazareth Compartment.	16	30 32	9 2	4 8	15,000 nuts were planted with ashes and cowding growth slow- Greatest height 3'– Many dead.
2	November 1878 ..	7.87 acres Palmyrah ..	Do.	17	30	9	4	16,000 nuts were planted—Growth very slow, maximum height 3'—Many dead.
3	November 1879 ..	129.80 acres Palmyrah ..	Do.	18	97	10	10	50,000 nuts planted—Manured with ashes of cowding in 1884 cost of two coolies for watering from December to February. Growth better 3' to 10' surviving.
4	November 1880 ..	125.02 acres Palmyrah ..	Do.	25	120	10	4	63,000 nuts planted—Growth better 3' to 10'.
5	November 1881 ..	155.25 acres Palmyrah ..	Do.	32	108	1	8	53,000 nuts planted—Growth better 3' to 10'.
6	November 1884 ..	96.15 acres Palmyrah ..	Do.	39	221	4	5	1,05,425 nuts were planted—Growth better 3' to 10'.
	November 1884 ..	....	Nalumavadi ..	..	....			394 Casuarina seeds planted 15 6' apart Improvement fellings done in 1892, 54 trees cut—Weight 2 1/4 Tons.
6(a)	6th November 1884 ..	37.91 acres Odai	Nalumavadi Compartment ..	33	91	4	8	154 measures of odai seeds were dibbled. There are trees of girth 1 to 2' growth dense.
(b)	6th November 1884 ..	3.00 acres Naval	Do.	..	6	6	0	Transplanted.
7	November 1885 ..	39.73 acres Palmyrah ..	Do.	35	133	7	0	7,500 planted. Growth a little better 3' to 5'.
(a)	October 1885	5.47 acres Odai	Do.	34	10	2	0	By penning goats and sheep after feeding with Oadai pods and then ploughing the locality.
(b)	November 1885 ..	4.00 acres Odai ..	Do.	..	4	1	4	20 measures of seed sown—Growth dense but height is less than 1'.
8	November 1886 ..	40.00 acres Palmyrah ..	Nalumavadi Compartment ..	88	148	11	2	18,000 nuts were planted—Growth slow 1' to 3'.
(a)	November 1886 ..	33.11 acres Palmyrah ..	Nazareth Compartment ..	15				
(b)	November 1886 ..	30.94 acres Palmyrah ..	Nalumavadi Compartment ..	4 & 8				
(c)	October 1886	8.00 acres Odai	Kudiraimozhi	..	49	2	0	Penning 25 heads of goats fed on 26 of pods an ploughing the locality.
(d)	October 1886	6.50 acres Odai	Nalumavadi Compartment ..	5	41	4	0	Penning 20 heads of goats fed and sheep. Very few regeneration—Girth less than 1'.
(e)	October 1886	15.11 acre Odai ..	Kudiraimozhi Compartment ..	37	8	10	0	Dibbling seeds that have possed through goats, mixed with fresh seeds. Poor germination girth less than 1'.
9	November 1887 ..	199.08 acres Palmyrah ..	Do.	31	248	1	10	10,200 nuts were planted—Growth very slow—Greatest height 3'.
10	September 1887 ..	43.70 acres Odai	Do.	30	98	8	6	By penning 40 herds of goats and sheep fed on Odai pods and dibbling 75 measures of seeds.
	October 1887 ..	50.00 acres Odai						
	October 1887	70.00 acres Odai	..	..	62	2	0	Diblliug Odai pods discharged through goats after feeding them with 30 cottah of pods.

10	November 1988	.. 132.75 acres Palmyrah ..	Kudiraimozhi Compartment ..	29	237	11	8	12,000 nuts were planted, Growth very slow maximimum 3 feet.
	(a) October 1888	.. Odai	Do.	..	132	8	0	Penning 40 flocks of goat after feeding 60 Cottahs of Pods.
	October 1888	.. 5.00 acres	Do.	..	7	3	0	For ploughing 5 acres.
	(b) October 1888	.. .. ..	Do.	..	3	4	6	Sowing broadcast 35,000 cashewnuts.
	(c) October 1888	.. .. ..	Do.	..	2	0	0	Sowing broadcast 15 Madras measure of Kolinje seeds.
	(d) November 1888	.. 20.00 acres Naval	Do.	..	35	5	2	Planting nanal grass in blanks.
	(e) December 1888	.. 9.00 acres Odai	Do. ..	..	7	10	10	Dibbling dung of goats 9 marakals.
	(f) December 1888	....	....	..	8	0	2	Planting Esalai sticks.
11	November 1889	.. 226.70 acrs Palmyrah ..	Do.	27	194	1	0	98,280 nuts were planted. Growth very slow. Maximum height 3'.
	(a) October 1889 ..	.. 19.15 acres Odai .	Do.	40	105	14	0	Penning 27 flocks of goats after feedings with 65 cottahs of pods.
	(b) October 1889 ..	.. 36.50 acres Naval	Do.	..	59	12	2	Nanal planted in blanks only 5 seedlings found. Girth less than 1' heigh to 4'.
	(c) November 1889	.. ..	..	..	1	0	0	120 Banyan sticks (cuttings) planted.
	(d) November 1889	.. ..	Do.	40	3	0	0	2,000 odai and virunettai seedlings planted.
	(e) November 1889	.. ..	Do.		8	8	0	Dibbling 9070 seeds of cashew in different places.
	(f) November 1889	.. ..	Do.	..	..			300 bamboos and 500 Vagai seedlings were transplanted at no cost. 50 and 100 of above respectively survived but none remaining now.
	(g) November 1889	– 3.68 acres	Do.	23	..			25 mango, 9 vagai and 2 illuppai seedlings transplanted. All are surviving. Height mango 5' 7' feet, vagai 12 to 15 feet Illuppai 5 to 7 feet.
	November 1889	72.15 acres Palmyrah	Do.	28	92	13	0	35,001 nuts planted, Most of them have germinated. growth slow.
	(a) November 1890	.. 15.00 acres Ceroads mixed with Odai.	Do.	19, 20, &21	151	3	1	Samai, thenai were sown in ploughed area mixed with odai. A few cotton seeds and odai germinated but the latter died during the hot weather.
	(b) November 1890	.. 9.00 acres Naval			35	9	8	Nanal transplanted in blanks. A few germinated and grew—others died.
	(c) November 189	.. ..	Do. ..		8	12	0	120 bamboos, 440, cashew and 200 banyan cuttings planted except for a few of cutting banyan all the others are died.
13	November 1891	.. 185.30 acres Palmyrah ..	Do.	26	244	14	2	98,400 nuts planted .All have germinated.
	(a) Septmber 1891	.. 40.00 acres Odai ..	.. Kachanavilai Compartment	9	69	0	0	1,500 sheep and goats fed on 48 cottahs of pods penned for 28 days. Large germination noticed but seedlings died during hot weaher.
	Septmber 1891	.. 14.00 acres Noval ..	..Do.		58	4	6	Nanal planted at 3 feet espacement in blanks in 1892 Results nil.
	(h) November 1891	15.00 acres Cereals with Odai.	Kudiraimozhi Compartment..	22	35	4	10	Cotton. castor Babul Green peal, odai, etc. sown ploughed area.—All germinated but died during summer.

(c) November 1891 ..	15.00 acres	Cereals with Odai	Kudiraimozhi and Kachinavilai				2 measures of Inga dulce 5 Madras Measures of tamarind mixed with seeds of babul, viruvottai and verali sown broadcast.
(d) November 1891 ..			Do.				Kodukkapuli alone, germinated near old well but died afterwards. 1,570 baniyan cutting and 34 Usil cuttings were planted at no cost along rights of way of which 360 Baniyan and 10 usil cuttings are surviving.
(e) November 1891 ..			Do,				Nanal grass planted in several places at no cost did not sprout due to lack of rains.
(f) November 1891 ..	3.68 acres		Compartment No. 28 Old Wel Kudiraimozhi.				12 seedlings of tamarind 60 of adina, 200 of casuarina and 21 of Nettilingam planted at no cost. In July 1893 the survivals were. Tamarind 12 Nos. Height 3 to 5 feet. Adina 48 Nos. Height 1 to 5 feet. Casuarina 142 Nos. Height 1 to 8 feet. Nettilingam 4 Nos. Height 1 to 3 feet.
November 1891 ..	0.55 acres		Padugai Compartment ..				35 tamarind seedlings planted by Watcher 25 of 2 to 4 surviving.
November 1891 ..	1.22 acres		Karukuvilankoil side Compartment.				*Species.* *Planted.* *Surviving.* *Height.* Neem .. 10 4 1 to 3 feet. Casuarina .. 50 30 1 to 3 feet. Nettilingam 7 3 1 to 2 feet. Adina .. 40 15 1 to 3feet.
November 1891 ..	2.05 acres		Kanam Side Compartment ..				200 casurina seedlings were planted out of which 110 of 1 to 11 feet are surviving.
November 1891 ..	4.10 acres		Nalumavadi				100 casurina seedlings planted. 92 to 1 to 6 feet. surviving—Height 6 feet.
14 November 1892 ..	201.30 acres	Palymrah ..	Kanam Teri	330	8	0	10,890 nuts were dibbled.
(a) September 1892 ..	40.00 acres	Odai	Muthukrishnapuram side ..	101	6	0	Penning goats (700)fed on pods. Ploughing the area and planting blanks with nanal. All germinated,
(b) November 1892 ..	21.00 acres of cereals with Odai etc.		Muthukrishnapuram side 11 acres and 10 acres in Kanam.	177	0	0	By manuring and ploughing thrice, peas, grass were sown.
(c) September 1892 ..	3.5 acres of cereals with Odai etc.		In Kanam Teri ..	8	8	0	Ploughed and gingelly seeds sown in March transplanted with nanal grass.
(d) November 1892 ..	1 Mile length		Thanmavadipannai Wall ..	28	0	0	1,200 palmyrah nuts dibbled. Transplanting nanal grass.
November 1892 ..			Kanam Teri	14	14	0	10 Madras mesures of cashew seeds dibbled in small holes among low places overgrown with nanal.
November 1892 ..			Semmarikulam	12	1	0	5 Madras Measures of cashew seeds sown as in above.
November 1892 ..			Kadukkuvilankoil ..	1	3	0	5 Madras measures of cashew seeds sown. All above three sowings of cashew germinated an remained in good state.

189. *Lushington's Working Plan.*—A Working Plan for the Teri was prepared by Lushington in 1901. He divided the reserve into 5 blocks namely Semmarikulam, Nazareth, Kanchinavilai, O'neil and Teri. The Works undertaken since 1901 to 1911 were :—

(*a*) *Semmarikulam Series* : Nine compartments—

(1) Sale and removal of dead palmyrahs.

(2) Enumeration, classifications and leasing of classified palmyrahs.

(3) Trenching and trimming of Vadalis and Olaivettus.

(4) Filling up balnks in the Palmyrah plantations and under planting with Dalberigia multiflora and Acacia planifrons.

(*b*) *Nazareth Series.*—Five compartments. In addition to the works mentioned under Semmarikulam series the plantitng of palymyahs on 170 acres annually was done.

(*c*) *Kanchinavilai Series.*—Ten compartments. The same work as mentioned in Semmarikulam series.

(*d*) *O'neil Series.*—Ten compartments. Palmyrah planted by sowing in annually 100 acres.

(*e*) *Teri Sereis.*—This is by far the most xrophytic type of area and lies on the North-Western corner and covers about half of the entire reserve. Planting of cuttings of Fiscus bengalensis at 30 feet apart along either side of the three principal roads corssing the series, at the rate of over a mile per annum.

190. The revenue derived from the reserve was more or less utilised in the above works. Between 1911 and 1917 perhaps due to the pre-occupation with works connected with the war nothing seemed to have been done in this area.

191. Works caried out subsequently are as follows :—

1918 : 1,31,250 palmyrah nuts dibbled in Semmarikulam and O'neil blocks at a cost of Rs. 254.4.0 and 15 acres in Kayamozhi were sown with Acacia planifrons seeds at a cost of Rs. 12.0.0.

1926 : 12 acres in O'neil block were dibbled with 5,220 plamyrah nuts at anespacement of 10 feet by 10 feet, the cost being Rs. 72.

1927 : In Lushington and Kanchinavilai series, 125 acres were dibbled with palmyrah at a cost of Rs. 176.11.0 sowing of Dalbergia multiflora and Acacia planifrons in Kachinavilai and Semmarikulam series was a failure and the expenditure involved was Rs. 72.00. In Teri series Rs. 395 was spent in dibbling palmyrah nuts over 28 acres but much of this was lost due to shifting sands.

1928 : 289 acres in Lushington, O'neil and Nazareth series were planted with palmyrah at a cost of Rs. 650.

1929 : 5 acres in Teri series were dibbled with cahsew at a cost of Rs. 13.12.0. This was almost failure. 1,100 acres were dibbled with palmyrah at a cost of Rs. 2,571. 60 per cent germinated and survived. Attempts to raise 10 acres with Acacia planifrons and 50 acres with Dodonea viscosa was a total failure, although about Rs. 120 were planted with Banyan cuttings.

1930 : 1,100 acres in Teri were dibbled with Palmyrah nuts at a cost of Rs. 2,571 and 70 percent success was noticed. Sowing of seeds of Acacia planiforns around Nazareth Rest House gave partial success.

1931 : 500 acres in Teri were dibbled with Palmyrah at a cost of Rs. 875.12.0 and 70 percent success was observed after two years. Compartment lines were planted with Banyan cuttings.

1932 : In Teri and O'neill series a total area of 500 acres were planted with Banyan cuttings at a cost of Rs. 880. This gave about 75 percent success.

1934 : Plamyrah dibbled in Teri east block over an area of 100 acres at a cost of Rs. 123. In Kachinavilai beat cashew seeds were dibbled at 24 feet by 24 feet at a cost of Rs. 9. In Nazareth block planting of feul species and cuttings of Odina wodier over 4 acres was done at a cost of Rs. 11.

1935 : 100 acres in Teri were dibbled with Palmyrah at a cost of Rs. 125 and 10 acres in Kachanavilai dibbled with cahsew seeds which cost Rs. 11. Planting of Odina, Ficus and Thespesia cuttings and fuel plantation over 5 acres in Nazareth at a cost of Rs. 35.

1936 : Rs. 125 was spent in dibbling palmyrah in 100 acres. In Kanchainavilai 10 acres will be dibbled with cashew seeds. Fuel plantation and planting of Odina, Ficus and Thespesia cuttings was done in Nazareth block at a cost of Rs. 42.

1937 : Palmyrah seeds were dibbled over 100 acres at a cost of Rs. 122 . Sowing seeds of Dodonea viscosa and planting stumps of Albizzia lebeck and Azarirachta indioa., etc and planting cuttings of Odina and Fiscus was done in Nazareth block at a cost of Rs. 30. Cashew nuts were dibbled at 33 feet by 33 feet over 6 acres in Nazareth.

1938 : Palmyrah nuts were dibbled over 100 acres at a cost of Rs. 121. In Nazareth cahsew seeds dibbled over 5 acres at a cost of Rs. 20. In Kanchinavilai cahsew seeds were dibbled and cuttings of Odina planted at a cost of Rs. 32.

1939 : Palmyrah was dibbled over 100 acres at a cost of Rs. 122. Dibbling of cahsew nuts over 21 acres in Nazareth at a cost of Rs. 24 was done. 900 cuttings of Odina were planted at a cost of Rs. 21.

1940 : Palmyrah nuts were dibbled over 100 acres in Teri at a cost of Rs. 125 and 100 acres were dibbled with cahsew seeds at a cost of Rs. 130. Cuttings of Fiscus and Odina were planted at a cost of Rs. 130. Cuttings of Fiscus and Odina were planted at a cost of Rs. 21. In Nazareth block seeds of castor and Dodonea Viscosa were sown at a cost of Rs. 22.

1941 : Palmyrah was dibbled over 100 acres at a cost of Rs. 121. Cashew was dibbled over 100 acres in each of the Kanchinavilai, Kayamozhi and Kanam beats at total cost of Rs. 200 for the 300 acres. Seeds of Dodonea viscosa were sown along a length 424 chains at a cost of Rs. 37. In Teri Casuarina planted over 11 acres at a cost of Rs. 1,100.

1942 : Palmyrah was dibbled in 100 acres at a cost of Rs. 131 in Nazareth beat in the remaining three beats, cashew nuts were dibbled over 300 acres at a cost of Rs. 85. Cuttings of Odina were planted at a cost of Rs. 15. In Teri 5½ acres of casuarina plantation were raised at a cost of Rs. 2,305.

1943 : Palmyrah nuts were dibbled over 100 acres at a cost of Rs. 199. Cashew seeds were dibbled over 100 acres at a cost of Rs. 100. In Kanchinavilai experimental sowing of seeds of Acacia planifrons over two acres was done at a cost of Rs. 18. In Teri 5 acres and in Kachanavilai 10 acres of Casuarina plantations were raised at a cost of Rs. 2,330.

1944 : A sum of Rs. 259 was spent for dibbling Palmyrah in 100 acres of Teri. Cashew was dibbled over 100 acres at a cost of Rs. 120. In Kanchinavilai horsegram was sown over 4 acres at a cost of Rs. 3,500 including the maintenance of 1943 plantations.

1945 : Palmyrah nuts were dibbled over 100 acres in Teri at a cost of Rs. 305. In Kanchinavilai 100 acres of cashew planting was done at a cost of Rs. 242 and 5½ acres of casuarina were raised at a cost of Rs. 900.

1946 : Palmyrah dibbling over 100 acres in Teri at a cost of Rs. 305 and 100 acres were dibbled with cashew nuts in pits at a cost of Rs. 243. In Kanchinavilai the previous years Casuarina plantations were maintained at a cost of Rs. 912.

1947 : Palmyrah nuts were dibbled over 100 acres at a cost of Rs. 365 in Teri. For raising ov pot plants of Prosopis juliflora an amount of Rs. 481 was spent. But no cashew dibbling was done during this year for want of rains, however about Rs. 200 was spent for preparing the ground, etc.

1948 : Palmyrah dibbling was doue in 100 acres at a cost of Rs. 463 and Rs. 566 was spent in dibbling cashewnut at 37½ acres in each of the 4 beats. For planting 80 acres with Prosopis pot plants an amount of Rs. 734 was spent.

1949 : For dibbling palmyrah nuts over 100 acres an amount of Rs. 463 was spent. For dibbling cashew nuts over 150 acres in 4 beats, Rs. 675 were spent. For raising of Prosopis nursery Rs. 655 were spent. Planting pots-plants of Prosopis over 200 acres was done at a cost of Rs. 466 and replacing casualries in previous years plantation cost Rs. 301.

1950 : Palmyrah dibbling was done over 100 acres at a cost of Rs. 448. The experimental plantation of Prosopis juliflora having proved a failure, this work was not continued further.

1951 : Dibbling of palmyrah nuts at a cost of Rs. 463 was done in 100 acres and Prosopis nursery was raised at a cost of Rs. 555. Planting of Prosopis was again taken up as the Conservator of Forests felt that it is worth while doing this on a limited area of 25 acres instead of 100 acres as prescribed in the Working Plan.

1952-53 : Palmyrah dibbling over 100 acres was done at a cost of Rs. 463 Prosopis nursery of 1951 was maintained at a cost of Rs. 296. Planting of seedlings of Prosopis juliflora over 25 acres cost of Rs. 325. Planting of Ficus and Odina cuttings was done at a cost of Rs. 396. Dibbling of cashew in two plots of 25 acres each was done at a cost of Rs. 292.

1953-54 : As palmyrah nuts could not be collected departmentally in 1952-53, from this year onwards nuts were brought from private lands at a rate of Rs.10 per 1000 nuts. Hence only 50 acres were dibbled in 1953-54 at a cost of Rs. 467. Dibbling of cashew over an area 25 acres in each of Kanam and Kachanavilai beats was done at a cost of Rs. 262. Of these two plots the former was done by planting basket plants raised in nursery. For raising prosopis juliflora nursery and for planting pot plants over 25 acres and for purchase of seeds the total expenditure come to Rs. 1,282. Planting of Ficus and Odina cuttings was also done in all the four beats at a cost of Rs. 380.

1954-55 : In Kayamozhi beat 100 acres were dibbled with palmyrah nuts at a cost of Rs. 721. Raising of cashew in two plots of 25 acres each was done at a cost of Rs. 262 In Semmarikulam block concentrated regeneration over a plot of 276 acres was done by forming interrupted trenches and pits at 22 feet by 22 feet. Seeds were sown in trenches and mounds and pot plants transplanted in pits. Fence at a cost of Rs. 2.20 per running chain was provided all a round the plot. The total cost of regeneration of 276 acres is Rs. 6,846. The Direct showing is complete failure, The stocking now among the container plants is about 20 percent. No further work was done in subsequent years in this plot. In 1954-55 in Kachanavilai beat 50 acres were regenerated on the same lines, here the present stock is about 40 percent, the surviving species are mostly Eucalyptus hybrid, Neem and Vagai. Direct sowing was utter failure. The total cost is Rs. 1,500.

1955-56 : In October 1955 concentrated regeneration by container plants in pits at 22 feet by 22 feet was done in 100 acres in Nazareth beat and 50 acres in Kanam beat. No attempt was made at direct sowing or forming trenches in these two plots. In 1956-57 casualties were replaced at a cost of 50 paise per acre. The total expenditure on the 100 acres plot is Rs. 3,073 and on the 50 acres plot is Rs. 1,567. The stocking now in Kanam plot is about 50 percent while in the bigger plot it is less than 25 percent.

In Kayamozhi 350 acres were planted with cashew basket plants at a cost of Rs. 3,965. The stocking now is about 50 percent and the height growth is 3 to 5 feet. Two plots of 25 acres each were planted with cashew as in 1954 at a cost of Rs. 377 for both. Palmyrah dibbling over 100 acres was done at a cost of Rs. 866. The condition of cashew plots is satisfactory with about 70 percent stocking.

1956-57 : Dibbling of palmyrah nuts in 100 acres was done at a cost of Rs. 923. Two cashew plots of 25 acres each were raised by basket planting at a total cost of Rs. 550.

1957-58. The above two items of work as in 1956-57 were done.

Miscellaneous Species in other Reserve Forests and Ex-Zamin Forests.

Melapattam Reserve Forests—

192. 1953-54 (150.00) *acres*.—The area was ploughed at 33 feet intervals making a short of long mounds. Seeds of Prosopis juliflora, Neem, Vagai, etc. were dibbled in September and again in October 1953. Pot plants were planted by the 3rd week of October. Initially the stocking was good but in later years heavy casualties occurred resulting in failure.

1954-55 (350.00 *acres*) :—As soil working and dibbling seeds in continuous lines was found to be very costly the technique was modified so that the soil was worked in patches 5' x 1' x 1' These patches were at an espacement of 11' x 11' Centre to Centre. Seeds of Babul, Vagai and Neem, etc. were dibbled in September-October 1954. Pot plants were planted in October in 1 feet cubic pits dug at an espacement of 22' x 22'. This also resulted in failure as in the earlier plantation.

1955-56 : (50.00 *acres*).—1' cubic pits were dug at an espacement of 16' x 16' and pot plants of Cashew, Albizzia amara, Neem, Vagai, Dalbergia sissoo and Eucalyptus hybrid were planted. The stocking at the end of the year was 50 per cent. Replacement was done in October 1956. However by 1958 the plot was failure.

Muthur Reserve Forests.

193. 1954-55 (346.00 *acres*).—The plantation was raised as in Melappattam 1954-55. This plot also likewise failed.

1957-58 (85.00 *acres*).—6' wide strips were cleared at 22' intervals and sunken mounts were formed 22' apart along the strips by digging trenches 6' long and 1' deep, Dibbling of seeds was done in July and there was no germination. In October pot plants of Eucalyptus hybrid, Neem, Vagai, Cashew, Red sanders and Ailanthus excelsa were planted. In 1958 it was noticed that the Eucalyptus hybrid was in satisfactory condition while the other species failed especially Alanthus excelsa.

194. *Gangaikondan Reserve Forests.*—

1954-55 : (50.00 *acres*) .—Pot plants of Ailanthus excelsa were planted in October 1954 in 1' cubic pits dug at an espacement of 22' x 22'. Replacement of casualties was done with Tamarind pot plants. This plantation also did not succeed.

1957-58 (100.00 *acres*).— Plantation was raised on the same lines as in Muthur 1957-58. In 1958 it was in satisfactory condition.

195 *Ettaiy puram Zamin Forests.*—

Kurumalai 1955-56 (150.00 *acres*).—Pot plants of Eucalyptus hybrid, Dalbergia, Sissoo, Neem, Vagai, etc. was planted in 1' cubic pits dug in 22' apart. In 1958 stocking was only 20 per cent.

Kurumalai 1956-57 (100.00 *acres*).— +160.00 *acres*.— In the 100.00 acres bit short trenches 6' x 1' x 1' were dug and mounds were formed with water trap on either side. In the other bit trenches were dug 11' x 1' x 1'. In September seeds of Vagai, Neem and Prosopis were sown on the mound and pot plants of the same species were planted in October. This also resulted in failure in 1958.

1957-58 (100.00 *acres*).— Work was done on the samer lines in the previous years with short trendches of 6 'with the sunken mound 4' long at the bottom. Containe plants of Eucalyptus hybrid, Neem, Vagai and Ailanthus excelsa were planted and the stocking was good at the end of the year especially Eucalyptus hybrid was doing well.

196. *Chalikulam* 1955-56 (150.00 *acres*).— Work was done as in Kurumalai during the same year and the result also was the same.

1956-57 (250.00 *acres*.)6' wide strips were cleared at the intervals of 33' stacking was done at 16½' apart, along the cleared strips. 1' cubic pits were dug and after weathering basket seedlings of cashew were planted. Later replacement of casualities was done by direct sowing and saucer method was adopted in 1957 and the stocking was about 50 per cent in 1958.

1957-58 (400.00 *acres*)— Clearing lines and digging pits was done as in 1956 but a saucer also was done around the pits to conserve moisture . Direct sowing of cashew seeds at the rate of 2 seeds per pit was done. In failed pits basket plants were planted as replacements of casualties at the end of 1958 the stocking was very good.

197. *Teak*.-Teak was planted is Singampatty Forest from 1939 to 1945 and the list is found in Para......

B. KANYAKUMARI DISTRICT

198. *Teak*.—In Paraliar teak was raised first in 1921 under taungya method. The planting was continued in spite of failures now and then, with break in certain years and upto 1958 an extent of 543.00 acres had been planted The thinnings were not done systematically. Wherever thinning was done had been rather haphazard.

199. The plantations, though not very good were fairly in satisfactory condition ; in sites selected with care. The list of plantations can be found in the Chapter under Teak Working Circle .

200. *Sandal*.—Two sandal seedlings introduced by some Forest Officers at Thadikarankonam in 1915 increased to 400 trees and 700 saplings by 1929. In 1937 the Distric. Forest Officer wanted to do sandal propagation in Thadikarankonam by dibbling seeds, but none of the seeds germinated Again in 1941 dibbing of seeds was tried ; which also resulted in failure. Further attempts were not made.

201. *Cashew*.—Cashew was raised in 1936 in Therkumalai Reserved Forests by dibbling seeds. The germination was good and the stocking was 75 per cent but with the setting in of summer the plants withered and dried. No further attempts seem to have been made.

Beedi leaves (*Diospyrops melonoxylon*)

202. This species introduced in 1941 at Thadikarankonam and Aramboli by dibbling seeds came up well. However, the Beedi manufacturers did not prefer this locality grown leaves. Hence further planting of this species was given up.

203. *Red sanders*: (*Pterocarpus santalinus*).—A small nursery was opened in 1949. Profuse germination was noticed. But most of the seedlings were damaged by wild elephants and the remaining seedlings were planted in the failed portion of 1946. Teak plantation over an extent of 2 aores. A few of them still survive.

t

204 .*Prosopis juliflora*.—W is tried by dibbling of seeds a different spots at Therkumalai during 1950. Very few seedlings survived and they also died later.

SECTION 7.

Thiru Rahamatulla's Plan Proposals, Implementation and Results.

205. *General*.—From the year 1959-60 the forests in this division have been managed as per the working plan prescriptions of Thiru S. A. Rahmatullah, who analysed the earlier working of these forests under different working plans and drew conclusions based on which he prescribed the constitution of 13 working circles which covered the entire area of this division. Some deviations have been sanctioned by the Chief Conservator of forests and some special works have also been undertaken outside the plan prescrptions, necessitated by the policy changes and quick development programmes.

206. (i) *Timber Selection Working Circle*.—This working circle covered all exploitable moist deciduous forests of Kalamalai, Veerapuli, Velimalai and Asambu Proposed Reserve of Kanyakumari district which were not included for conversion into teak and matchwood and the wet evergreen forests in Nanguneri Range.

207. The areas in Kanyakumari district were exploited under selection working circle during the years 1921-1947 and the plan prescriptions were not followed and accessible areas were gone over more than once. Improve fellings and cultural operations were ignored, so ingaps grass came up and was then subject to fire. The haphazard working resulted in poor stocking in accessible areas. The evergreen forests in Nanguneri Range were worked during the period 1892 to 1913. In the beginning the system of working was to permit the contractor to fell and remove a certain quantity of timber and he was at liberty to take them from any where and the payment was on the actual quantity he removed to the depot in plains. If he finds any tree unsuitable after cutting he rejected it and felled another and so on which resulted in wasteful exploitation. The next system was to sell marked trees standing in located areas (coupes) and payment was to be made in lumpsum for all the trees marked for sale and not to be calculated on the actual outturn. The exploitable girth was 7 feet at breast height and the felling cycle was 6 years and about 200 trees were marked for sale each year. No attempt was made either to encourage natural regeneration or supplement by artificial means. The Sengaltheri areas was worked in the years 1932, 1936, 1937, 1939 to 1942 under agency of contractors. During 1943-44 departmental exploitation was done to meet the defence requirements. In Cariappa's plan the evergreen areas were given the much needed rest.

208. Thiru S. A. Rahmatullah prescribed the working of the above areas under selection working dividing into 3 felling series namely Kulasekaram, Alagiapandiapuram and Sengaltheri whereby only matured trees of selected species over a minimum prescribed girth limit were to be removed with a felling cycle of 15 years and yield was regulated on area basis.

209. However no working has been undertaken as arge stock of timber had accumulated in Nagercoil due to large scale clear felling work done for raising rubber plantations, outside the prescriptions of the plan, and deviation was sanctioned in Chief Conservator's No. D. Dis. 58753/68, dated 24th November 1968.

210. (ii) *Teak Plantation Working Circle*. The working circle consisted of the then existing teak plantations in Veerapuli reserve as well as areas considered to suitable for conversion into teak plantations, situated in the outer and lower fringes of Veerapuli, Kalamalai and Velimalai reserves apart from Asambu proposed Reserve and Thudalikadu unreserve. The natural forest taken up for converstion into teak plantations were the deciduous forests.

211. The working circle was divided into 3 felling series, namely Thadikarankonam series, Paraliar series and Kodayar series.

212. The Thadikarankonam series comprised of 132.11 ha. planted in Azhagiapandiapuram Range during the period 1942 to 1946 and 1958 and areas suitable for planting in Veerapuli, Velimalai and Asambu. Plantations were raised in this series till 1969 but not in the areas prescribed and later because areas had to be found for the extension of rubber plantations the areas were diverted for the purpose and planting was done in Velimalai from 1970 and till 1972—660.71 ha. have been planted.

213. The Paraliar series included 230.99 ha. of plantations raised earlier and 482.66 ha. during the period 1959—1972 making a total of 717.65 ha.

214. In the newly formed Kodayar series 691.[illegible] ha. have been planted during the period

215. The silvicultural system adopted was clear felling followed by concentrated regeneration with Teak. The rotation tentatively fixed was 40 years hoping that the final crop will attain an average girth of 45 inches, with proviso to examine it at the end of 40 years and increase it to 80 years if growth is better. It was suggested that the final rotation may be decided after 20 years based on the statistics gathered at the proposed research centre at Thadikarankonam.

216. The plantations were raised mostly under Taungya and they raised mainly tapioca and the lease period was two years. It was suggested to plant "*Dalbergia latifolio*" on the periphery of the regeneration area.

217. Subsidiary silvicultural operation like first year tending weeding, cutting back and tending in second and third years were prescribed.

218. The thinning cycle was at ages 6, 12, 19, 29 and the final thinning in the 40th year to be decided at that time.

219. The teak plantations excepting a few are not as promising as they should be considering the locality factors. Keeping the area free from weeds and climbers which impede the growth has not been given due attention, whether raised under kumri or not. The kumridars after benefiting fully from the lease leave the area without clearing the unwanted growth. Further there is a tendency for them to prune the branches and leaves of teak. The kumridar pays more attention to his crop than teak with the result teak gets suppressed. As soon as the kumri crop is removed suddenly weeds and climbers come in which will have to be removed periodically to keep the plants in hygienic condition. The thinning regime has to vary according to the growth rate of the plantation as some of the plantations are found to be congested in spite of thinnings carried out.

220. The list of plantations is given in Part II under Teak Working Circle.

221. (iii) *Fuel Working Circle.*—The Fuel Working Circle comprised of all areas situated in Nanguneri and Tirunelveli Ranges that have been already allocated to fuel working circle in the earlier plans and new areas in Singampatty Ex-zamin forests and also in Mahendragiri reserve where no fuel coupes were worked in the past. The type of forest growth is dry deciduous. With the exception of newly formed series by Thiru S. A. Rahmatullah the other series contain a series of age gradations upto 30 years having been worked in the past. The rotation was increased to 40 years in the current plan as in certain series the stocking found in the 30th year was poor. Further in the other series the final crop resulting from coppice will be able to attain an average girth of 20". The yield was regulated by area. The silvicultural system adopted was simple coppice leaving reserved trees followed by artificial regeneration to supplement the coppice growth.

222. Twelve felling series were prescribed (excluding Kundar in Tirunelveli North Division)

223. The following statement gives particulars of the coupes sold till 1973-74. —

Serial number.	*Name of series.*	1959–60	1960–61	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74	*Remarks.*
1	Kolundumamalai	XI	XII	XIII	..	..	XVI	XIV	XV	..	..	..	..	..	..	..	..
2	Parivarisurian	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	..	..	..	XXII	..	..	..	..
3	Padmaneri	XI	XII	..	..	XIII	XIV XV XVI	XVII	XVIII	XIX	XX	..	XXII	..	..	..	..
4	Thirukarangudi	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	..	XX XXI	..	..	..	..	..
5	Vadagarai	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	..
6	Nambikoil	XI	XII	XIII	XIV	XV	..	XVI XVII	XVIII	XIX	XX	XXI	XXII	..	..	..	..
7	Kilmanimuthar	I	II	..	..	III IV	V VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	..
8	Kalakad	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXI	XXV	..
9	Malayadipudur	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	..
10	Vallanad	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	Panagudy	I	II	III	IV	V	..	..	VI	VII	VIII	IX	X	XI	XII	XXIII	..
12	Aramboly	I	II	III	IV	V	..	..	VI	VII	..	..	VIII X	..	..	..	..

224. Due to poor stunted thorny growth there was no regular working of the coupes in the years prescribed in some of the series as could be seen in the above statement from 1971-72 there has been no demand for the following 8 series :—

(1) Padmaneri
(2) Kolundumalai
(3) Parivarisurian
(4) Thirukarangudi
(5) Nambikoil
(6) Aramboly
(7) Vallanad and
(8) Malayadipudur

225. In the felled coupes where regeneration has been done as per working plan prescriptions following one or the other of the methods of dry fuel afforestation namely saucer method or trench and mound method, the results have not been encouraging, so given up after 1965-66.

226. The following statement gives the particulars of regeneration done. No regeneration was done after 1965-66.

Serial number and name of series.	Felled coupes regenerated during the period 1960-61 to 1965-66.											
	1960-61		1961-62		1962-63		1963-64		1964-65		1965-66	
	Coupe No.	Area ha.	Coupe No.	Area ha.	Coupe No.	Area ha.	Coupe No.	Area ha.	Coupe No.	Area ha.	Coupe No.	Area ha.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 Kolundumalai	XI	14.8	..	..	..	..	..	..	..	..	..	..
2 Parivarisurian	XI	22.8	..	..	..	..	XIV	20.00	XV	26.00	XVI	19.2
3 Padmaneri	XI	21.2	..	..	..	..	..	..	XIII	3.2	..	..
4 Tirukarangudi	XI	13.2	..	..	..	..	XIV	13.2	XV	12.0	..	..
5 Vadagarai	XI	22.4	..	..	..	..	XIV	22.00	XV	24.0	..	..
6 Nambikoil	XI	23.2	..	..	..	..	XIV	10.00	XV	16.0	..	..
7 Kilmanimuthar	I	25.6	..	..	..	..	III IV	32.8— 36.00—	..	..	..	..
8 Kalakad	XI	37.6	..	..	..	..	XIV	34.00	XV	37.6	..	..
9 Malayadipudur	XI	9.2	..	..	..	..	XIV	4.00	XV	8.00	..	..
10 Vallanad	XI	32.4	..	..	..	..	XIV	20.00	..	..	..	..
11 Panagudi	I	17.2	..	..	..	..	IV	13.6	V	12.4	..	..
12 Arambeli	I	12.8	..	..	..	..	IV	10.00	V	13.2	..	..

227. (iv) *Faggot wood Working Circle* :—The villagers of Kanyakumari district living near forests have been accustomed to remove head loads of faggot wood from the government forests. To discourage this practice and to have a smooth change over to eventual complete discontinuance, a faggot wood working circle was formed in the lower fringes of Mahendragiri, Thadagamalai and Velimalai reserve forests where the villagers can get their requirements of fuel. Incidentally the stocking in these areas could be improved by coppicing the existing the growth and restocking it artificially with better species. The prescriptions of this working circle were not followed. The Government have discontinued the system of the free removal of firewood and faggot wood from the Reserved Forests of Kanyakumari district with effect from 1st April 1964 in the interest of forest conservancy *vide* G.O. Ms. No. 1020, dated 26th March 1983. So the faggot wood working circle has been deleted in to.

228. (v) *Rehabilitation Working Circle* : The Working Circle consisted of some of the Ex-Panchayat Forests which had deteriorated under the past Panchayat management and also parts of Ex-Zamin forests. Since 1954 attempts have been made to rehabilitate these forests. The type of forests met with are the southern tropical thorn forests in Singampatti which have been over exploited.

229. The working circle was divided into 3 felling series namely, Kurumalai, Gangaikondan and Singampatti. It included areas fairly well stocked in the earlier attempts and those areas which are plantable with fairly good soil.

230, The annual regeneration area was to be selected and also the extent to be planted was to be decided by the District Forest Officer according to the convenience of management.

231. The list of plantations raised under this scheme is given below :

Serial number.	*Name of R.F.*	*Year of plantation.*	*Area in hectares.*	*Species.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	Gangaikondan	1958	60.70	Neem, Ailanthus Eucalyptus hybrid, Vagai Tamarind.	..
2	Do.	1959	145.69	Do.	..
3	Do.	1960	97.13	Do.	..
4	Do.	1961	80.13	Do.	..
5	Do.	1962	24.28	Do.	..
6	Do.	1963	20.23	Do.	..
7	Muthur	1958	66.77	Do.	..
8	Kurumalai	1958	40.47	Do.	..
9	Do.	1960	80.94	Do.	..
10	Do.	1961	80.24	Do.	..
11	Singampatti	1960	20.23	Vagai, Neem, Pungam	..
12	Do.	1961	12.14	Do.	..
13	Do.	1962	20.63	Vagai, Usil, Teak, Eucalyptus	..
14	Do.	1963	20.63	Do.	..
15	Do.	1964	20.24	Neem, Vagai, Usil, Tamarind	..
16	Do.	1965	10.11	Do.	..

232. The technique adopted was to clear 6 feet vide strips 22 feet apart and plant container plants at 22 feet espacement adopting one or the other of the three methods namely sunken mound, saucer and the trench and mound methods according to the terrain of the planting area. The following species were suggested Eucalyptus hybrid, Azadirachta indica, Albizzia lebbeck, Dalbergia sissoo and Pterocarpus santalinum. A few seeds of neem, Vagai and tamarind were also sown at each mound. Weeding, causalties replacement, soil working and setting right of mounds and saucers and replacing casualties in the 2nd year were prescribed.

233. The results in Singampatti are farily satisfactory but in other plain areas like Kurumalai, Gangaikondan and Muthur the results are poor. Planting under this scheme was discontinued as per Chief Conservator's No. Ms. 30/68, dated 13th February 1968.

234. (vi) *Softwood Working Circle* :—The Working Circle included all the areas which have been hitherto planted with matchwood and the areas supporting natural forest and fit matchwood. The areas selected for conversion mostly contained secondary growth in moist deciduous type, the original having been clearned by the planters in the past for coffee cultivation and areas abandoned by the planters in the past for coffee cultivation and areas abandoned by the kanis after shifting cultivation. One felling series in Veerapuli Reserved Forest was formed to plant up 150 acres yearly for 25 years. Most of the areas suitable for softwood were also fit for rubber and teak, Because rubber and teak has to be given priority, the area left behind was limited, so it was proposed to take up some of the later coupes out of areas included in teak conversion circle and plant them with Matchwood, so that by the time that area comes for planting of teak, the matchwood plantation

would have reached exploitable age. Another series was to be formed in Karadikulam forests if experimental plantation raised was successful.

235. The species suggested to be planted were Ailanthus malabaricum, Salmalia malabaricum, Sterculia companulata, Melia dubia and Albizzia moluccana.

236. The espacement adopted was 11' x 11'. The silvicultural system adopted was clearfelling followed by artificial regeneration and the rotation was fixed as 25 years expecting to get tress of atleast 60" girth as final crop.

237. Till 1973-884.14 ha. have been planted in Veerapu series. Karadihulam series was given up after expermentation as the soil was not suitable and the rainfall inadequate. But another series in Balamore was opened in 1965, with 25 ha. as annual target and 251.17 ha. have been planted till 1973. The list of plantations can be seen in Chapter on Softwood Working Circle in Part II.

238. Kumri cultivation was allowed for 3 years, Tapioca has suppressed the plants and when the kumridar vacated there has been dense mass of climbers and shrubs-strangling the planted species. During 1966 inter planting with Eucalyptus grandis has been done on 1960 1962 and 1963 plantations, which was not successful having been covered up by fast growing softwood species In certain cases replacement of casualties has been do. with same species. Albizzia moluccana has done much better than the other species.

239. (vi) *Ieri Forest Regeneration Working Circle.* This Working Circle covers the entire Kudiraimozhi Teri Reserve. This reserve is a great undulating expanse of red sand. The surface formation of these masses of sand is constantly changing under the action of south-west monsoon winds. The danger of drifting sand has long been recognised and even a centuary back the ryots were encouraged to plant them up with trees on favourable terms. Later it was formed into a reserve and the Forest Department made efforts to arrest the progress of the drifting of sand dunes. The seeds of Acacia planifrons, Dalbergia multiflora and Dodonia viscosa were sown with ragi and other dry grains. But the results were negligible. Penning of goats fed on pods of Acacia planifrons has been tried and it was only slightly more successful. Then the department concentrated on the planting of Palmyrah and in this attempt though the palmyrah is slow they have helped to arrest the movement of sand and a sizable portion on the western side of teri has been fairly fixed. On the eastern side near Kanam cashew has done failry well. Neem trees are seen occasionally here and there propagated perhaps by the birds. Although the major portion of teri consists of exposed sand dunes with sprinkling of palmyrah growth there are some patches supporting different intensities of tree growth varying from bare sands in the mid Teti to mangrove type of forest on the eastern edge.

240. The problem faced is not so muchof one of fixtion of the sand but to plant up the open areas. In this attempt during the current plan cashew was planted at 22' X 22' espacement and then reduced to 16½' × 16½'. Miscellaneous species of Neem, Albizzia lebbeck. Dalbergia sissoo and cashew have been planted along with Eucalyptus hybrid, the later forming 10 percent of the plants planted at 16½' × 16½'. The list of plantations given below :

Sertal number.	*Year.*	*Nature of work.*	*Location.*	*Extent acres.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	1959–60	Dibbling of Palmyrah	Nazereth Beat	100	
		Avenue planting	Do.	10	
			Kayamozhi Beat	10	
			Kachanavilai Beat	10	
			Kanam Beat	10	Planting with cuttings of Odaina Wodayar
		Raising Cashew Plantations	Machanavilai Beat	25	
2	1960–61	Dibbling Palmyrah	Nazereth Beat	100	
		Avenue planting	Do.	10	
			Kayamozhi Beat	10	
			Kachanavilai Beat	10	
			Kanam Beat	10	
		Raising Fuel Plantation	Do.	50	
		Raising Cashew	Kachanavilai Beat	25	
			Kanam Beat	25	
	1961–62	Dibbling of Palmyrah	Nazareth Beat	100	
		Avenue planting	Road leading to Nazareth Rest House	4 furlongs	
		Raising Fuel Plantation	Kanam Beat	50	
		Raising Cashew Plantation	Kachanavilai Beat	25	
		Cashew Plantation	Kanam	25	
			Kayamozhi	25	

Serial number.	*Year.*	*Nature of work.*	*Location.*	*Extent in acres.*	*Remarks.*
4	1962–63	Dibbling of Palmyrah	Nazareth Beat	20	
		Avenue planting	Road leading Nazareth Rest House	3½ furlongs.	
		Rasing Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	25	
			Kanam	25	
			Kayamozhi Beat	25	
5	1963–64	Dibbling of Palymyrah	Nazareth Beat	100	
		Avenue Planting	Kachanavilai-Poochikadu Road	3¼ miles.	
		Experimental planting of Rajasthan species.	Nazareth Beat	40	(10 acres done by) ESSO Co.
		Raising Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	50	
			Kanam Beat	50	
			Kayamozhi Beat	50	
6	1964–65	Dibbling of Palmyrah	Nazareth Beat	10	
		Raising fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	90	
			Kanam Beat	90	
			Kayamozhi Beat	90	
7	1965-66	Raising Palmyrah Plantations	Nazareth Beat	100	
		Raising Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	70	
			Kanam Beat	60	
			Kayamozhi Beat	70	
8	1966–67	Rasing Palmyrah Plantations	Nazareth Beat	100	
		Raising Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations.	Kachanavilai Beat	50	
			Kanam Beat	50	
			Kayamozhi Beat	50	
9	1967–68	Raising Palmyrah Plantations	Kayamozhi Beat	50	
			Nazareth Beat	100	
		Raising Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	50	
			Kanam Beat	50	
			Kayamozhi Beat	50	
10	1968–69	Raising Palmyrah Plantations	Nazareth Beat	25	
		Raising Fuel Plantations	Kanam Beat	50	
		Raising Cashew Plantations	Kachanavilai Beat	50	
			Kanam Beat	50	
			Kayamozhi Beat	50	
11	1969–70	Raising Palmrah Plantations	Nazareth Beat	20 ha.	
		Raising Fuel Plantations	Kanam Beat	20 ha.	
		Raising Cashew Plantations	Kachanavilai Beat	20 ha.	
			Kanam Beat	20 ha.	
			Kayamozhi Beat	20 ha.	
12	1970–71	Raising Palmyrah Plantations	Nazareth Beat	25ac	
		Raising Fuel Plantations	Kanam Beat	20 ha.	
		Raising Cashew Plantations	Kachanavilai Beat	50ac	
			Kanam Beat	50 ,,	
			Kayamozhi Beat	50 ,,	
13	1971–72	Raising Palmyrah Plantations	Nazareth Beat	100 ,,	
		Raising Fuel Plantations	Kanam Beat	40 ,,	
			Nazareth Beat	40 ,,	
		Raising Cashew Plantations	Kanam Beat	40 ha.	
			Kayamozhi Beat	40 ha.	

241. It was found that cashew only has shown semblance of success but the plants refused to grow up and the other miscellaneous species have failed. In later years Acacia planifrons has been tried and they are also struggling to survive. Palmyrah nuts have been dibbled and the growth is slow. Of late Acacia auriculiforamis and Casuarina are being tried on both sides of track leading to Kayamozhi.

242. On the whole due to various factors like drought, cattle damage, lack of nutrient and inadequate supervision, the plantations present a said picture.

243. In Sathankulam cashew and odai planted for the first time in 1971 have failed and a few seedlings of cashew planted in 1972 are surviving.

244. (viii) *Cashew Plantation Working Circle.* This Working Circle was divided into 2 planting series namely Chalikulam and Kalkulam. The Chalikulam series included the existing plantations of 1956 and 1957 and all areas suitable for planting with cashew. The Kalkulam series covered the degraded forests of the Kaklulam grazing block in Kanyakumari district.

245. The above working circle was constituted to increase the productive capacity of these degraded forest by raising cashew, an economically very important tree.

246. *The list of plantation is given below :*

Serial number and name of Reserved Forest.	*Year of plantation.*	*Area in ha.*	*Species.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
Chalikulam Ex-Zamin Forests :				
1	1957	161.87	Cashew	
2	1958	161.87	Do.	
3	1959	161.87	Do.	

Serial number.	*name of Reserved Forest.*	*Year of plantatie.*	*Area in scres.*	*Species*	*Ker ar.*
		Chaliculam Exzanin Forests.			
(1)	(2)	(3)	(4)	(5)	
4		1960	165.92	Do.	
5		1961	102.79	Do.	

247. Plantations were raised upto 1961 in Chalikulam and in all 856.5 ha. have been planted. Planting was dis-continued as the balance area was required for grazing Later, considering that Chalikulam is not suitable for Cashew, the planting of cashew was given up as per Chief. Conservator's instruction in CCP Mis. No. 30-68, dated 13th February 1968.

248. In Kalkulam grazing block teak planting was done 1963. So cashew was not planted.

249. Cashew planting is being done in Kudiraimozhi Teri and Sathankulam Teri.

250. (ix) *Lac Working Circle.* Prior to the current plantation, when in Kerala, Laco ultivation was restricted to scattered patches of Kusum trees outside the reserves and the occurrence of large number of trees in the Veerapuli reserves and the occurance of large number of trees along Balamore Road, a large number of trees over 60" in girth and young saplings also were found, so a lac working circle was formed in this area annexing some porambokes also and called Thadikarankonam Farm. This was divided into 4 blocks for the usual operations. Artificial regeneration in compact areas and tending of advance growth was also suggested.

251. Accordingly lac cultivation was done till 1966-67 Plantations were raised in Kulasekaram and Alagiapandiapuram Ranges and as well as in Singampatti forests and the results were not encouraging. The list of plantations is given below :

Serial number.	*Name of Reserved Forest.*	*Year of plantation.*	*Area in acres.*	*Species.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	Veerapuli RF (Chellamturuthi) ..	1960	15.00	Schlerchera trifuga	
2	Singampatty	1961	20.00	Do.	
3	Veerapuli RF (Valia ela)	1962	75.00	Do.	
4	Singampatti RF	1962	24.00	Do.	
5	Do.	1963	31.00	Do.	
6	Veerapuli RF (Valia ela) ..	1964	20.00	Do.	
7	Singampatti RF ..	1965	20.00	Do.	
8	Do. ..	1966	21.00	Do.	

252. Experimental plantations were raised with Mahognia macrophyla which also did not prove successful. Lac cultivation was discontinued as per the instructions of the Chief Conservator of Forests and later dropped *vide* D. Dis. 30/68, dated 13th February 1968.

253. x. *Bamboo Working Circle.*—The Bamboo Working Circle comprised of all the bamboo bearing areas in Kanyakumari forests overlapping selection and teak plantation working circles. The most common bamboo is Bambusa arundanacea. The Working Circle was divided into 3 series and a felling cycle of 3 years was adopted and the yield was regulated by area, each series being divided into 3 coupes. The coupe not sold in a particular year was not sold in next year. One cycle was completed in the 3 series and thereafter the demand petered out as the area under Bamboo got reduced having been converted to rubber, teak or softwood plantations. Later because of the gregarious flowering of bamboos during 1960–61 the bamboo coupes were closed from up to 1971–72. Then the Chief Conservator of forest working permitted to work one bamboo coupe in each of the two ranges, one after the other from 1971–72. Accordingly the whole Alagiapandiapuram Range was sold as one unit in 1971–72 and the Kulasekaram Range in 1972–73.

254. xi. *Minor Forest Produce.*—This working circle included all the reserves and unreserves of this division under the control of the Forest Department excluding the areas leased out to Bombay Burma Trading Corporation in Singampatti forests. The main items of the Minor Forest Produce collected are—Tamarind, Avaram bark, Rattan, Thatch and Fodder grass, Gallnuts, Honey and Bees Wax, Cashew nuts, the usufructs of Palmyrah, cardamom, Lavangam bark, Reeds, Lemon grass, Nunnary roots etc.

255. Lease units were formed of compact size for various produces. Specific conditions were laid for extraction of the different produces. A rotation of 5 years was fixed for Lavangam bark, Reeds and Rattan.

256. The right to collect the produce was leased out to the contractors after sale in open auction. The lease period was 1st July to 30th of succeeding June. Ivory and deer horns were to be collected departmentally. In later years the right to collect tea leaves from the abandoned tea estates of Ponmanai village in Kanyakumari district was sold as a separate unit.

257. Eta reeds is taken out of the Minor Forest Produce lease and sold to Messrs. Sun Paper Mills. who have entered into contract for 12 years from 1970.

258. xii. *Grazing Working Circle.*—This working circle included all the forests in the division with the exception of those areas which were closed to grazing mainly for silvicultural and occasionally for other reasons

259. *Permanent closure :* The following areas were permanently closed to grazing :—

Range. (1)	*Locality.* (2)	*Area in acres.* (3)	*Remarks or Reasons.* (4)
Tirunelveli	The entire Kudiraiozhi Teri Reserved Forest ..	12,772	Afforestation Programme.
Nanguneri	Mahendragiri in Kalakad Reserve	1,500	Bison Sancturies
	Pechimadankadu area near	2,500	Bison sencturies.
	Vengainaickararaikat	2,500	
Azhagiapandiapuram	Muthukuzhi Vayal Vally i.e., Compartment 5 in Veerapuli Reserve.	10,000	Do.
Kulasekaram	Compartment 3 in Kalamalai Reserve	6,000	Do.

260. *Temporary closure* All plantations were closed to grazing for a period of 4 to 6 years from the year of formation. In addition provision was made to close areas subject to incendiarism.

261. *Grazing Unit.*—The whole division formed one grazing unit and accordingly a grazing permit was valid over the whole division.

262. *Grazing Fees.*—Grazing Fees was raised from Re. 0.25 to Re. 0.50 for sheep and Re. 0.50 to Re. 1.00 per cow and Re. 1.00 to Rs. 2.00 for buffaloe with effect from 1st of July 1971.

263. *Grazing year.*—The grazing year was from 1st of July to the succeeding 30th of June.

264. *Penning.*—Penning was permitted under certain regulations.

265. *Free grazing.*—Kanis were allowed free grazing concession for their own cattle.

266. *Improvement of grase lands.*—It was proposed to raise annually 100 acres of Cenchrus ciliaris grass in Gangaikondan Reserve. In 1961 and 1962 within the rehabilitation plots along the cleared strip uprootal was done and grass seeds were sown in raised mounds 15' x 4' in interspace between plants, but are given up afterwards as not successful.

267. *Results.*—The closure to grazing of young regeneration areas has not been effective so also the permanent closure of Teri Reserved Forest. The problem of unrestricted over-grazing by cattle of low utility value cannot be solved unless a sense of awareness comes to the public or a deliberate attempt is made to preclude them by increasing the grazing fees considerably to equate with the cost of stall feeding.

(xiii) *Miscellaneous Regulations*

268. (i) *Village forests.*—Even in 19th century the natural growth of Acacia arabica, Acacia planifrons in various tank beds were attempted to be fostered and extended. In 1876 these reserves some 18,500 acres in extent were under the charge of a sub-Assistant Conservator and replaced by a Ranger. There was disagreement over the management of these forests between the revenus and forest authorities regarding the rights of the villagers for small timber and grazing of cattle. It was impossible to exclude even goats.

269. In 1881 these reserves were transferred to the Revenue Department and worked by a Tahsildar assisted by a forest subordinate staff and village officials which was not satisfactory. In 1887 the Government ordered management of these areas to be exercised through the forest branch of the Collector's Office. The direction was to be given by the Forest Officer and executed by the revenue establishment. The revenue exploited was more than the output which went against the principle of sustained yield. The annual revenue of Rs. 15,000 was collected from the period 1885-86 to 1895-96. The revenue after meeting the legitimate wants of the villager was credited to Forest and Revenue Department proved most unsatisfactory.

270. In 1896 it was realised that these reserves which were afforded protection only under Section 26 of Madras Forest Act should be constituted into ' reserve ' forests. However since nearly all of them were below 1 sq. mile in extent and scattered all over the division, it seemed inadmissible from the point of view of supervision and expense to reserve them. So the management of these areas remained with the Revenue Department, the District Forest Officer was rarely consulted only on professional matters. The revenue sunk low because of the poorer management.

271. Thiru V. S. Krishnasamy in 1943-45 drew up a scheme for raising fuel forests on tank foreshores and waste lands but it was not implemented. Thiru S. A. Rahmatullah feeling the expediency of taking up the scheme suggested commencement of planting from 1959. However the planting operations were begun in 1967 under 5 year plan schemes. Mostly tank beds were planted along with the porambokes. In the tank beds the main species was Acacia arabica and in the waste lands Anacardium accidentale and other miscellaneous plants were planted.

272. Till 1973, 2,949.40 ha. have been planted in about 53 places spread over the Tirunelveli district part of the division. The list of plantation is given under Farm Forsetry.

273. *Results* The plantations on the whole are not good except a few. However the scheme can be made a success with more intensive management by way of proper selection of species and timely planting under close supervision and willing cooperation of the villagers, against damage by cattle and theft.

274. The only snag is to get the lands with the consent of the panchayat concerned. Perhaps the incentive created by allotting 50 per cent of the sale proceeds of the plantations raised to the panchayat as per G. O. Ms. No. 117 Agriculture, dated 12th January 1971 can help to get over this. The enforcement of protection can be made meaningful if these lands are notified under section 26 of Madras Forest Act.

(ii) *River Fringe and Canal Bank Forests.*—

275. Tamil Nadu became poorer in teak with the transfer of the best teak plantations to Kerala during State reorganisation. So it became imperative to raise teak wherever the soil and miosture conditions, were favourable. The river fringe and canal banks came in handy for the purpose.So a special division was formed in 1956 with headquarters in Tanjore and a Range Officer attached to the division was situated at Palayamkottai. He has raised plantations in 1956, 57 and 58 along the Thambiraparani river banks and its canals. In all 124.60 ha. were planted in bits and handed over to the District Forest Officer, Tirunelveli South Division for maintenance.

276. Subsequently plantations were raised in the river fringes by the Tirunelveli South Division staff and till now 390.50 ha. have been planted with various species like Dalbergia sissoo, Casuarina equiset(i) folia, Pongamia glabra, Eucalyptus hybrid and Tectona grandis. Plantations raised in canal banks over an extent of 50.46 ha., have been handed over to the Public Works Department for further mainenatnce. The list of plantation is given under Chapter on River Fringe and Canal banks plantations.

277. *Resul.s* —The teak planted along the canal banks has done very well. The growth is phenominal in certain places. Lack of protection has caused set back in a few planes. Further limited area only is available for future planting of teak.

278. In the case of river fringe plantations, by and large they are good. . .Teak has grown well but needs to be thinned. Sissoo has grown very well so also Eucalyptus hybrid. The important other miscellaneous species are to lerable. But care has to be taken in the selection of site and the species suitable. In the anxiety get more area plianted mid-stream planting has been done which has been washed away. Further, lack of protection is evident.

Plantations raised outside the Plan prescriptions.

279. *Eucalyptus grandis.*—Eucalyptus grandis was introduced in Balamore in 1968 and finding that it has not faired well planting was discontinued after 3 years. The cause for failure was exposure to heavy wind and fire. Again this species is tried in Upper Kodayar since 1972 and it looks promising but is destined to fail if not kept free from weeds and climbers. This species will be prescribed for planting in large scale in Upper Kodayar along with Pinus patula.

280. *Piper nigrum (Pepper).*—Pepper was raised in Kulasekaram Range in Pechiparai Block in 1959 and continued till 1967 (36.16 ha.). In the initial stages it looked promising but because of neglect and litigation of the land in question, it ended in thorough failure.

281. *Ocharomus lagopus.—(Balsa wood).*—An expermental planting of Balsa wood was undertaken in Veerapuli Reserved Forests in 1971 over an extent of0.50 ha with ucontainre plants. The stocking is very scanty. today and the causs of fallure sis not known.

282. *Cocoa.*—Cocoa was planted in Pechiparai Grazing Block in two pits (4·00 ha.+ 6.00 ha.) in 1971. By 1973, most of the plants died and more or less replanting of the area undertaken in 1973 and the present stocking is good. In 1972 and 1973, 2 ha. were planted each year under the shade in 1958 Softwood plantations near Rubber Factory. The plants are thriving but they do not look happy.

283. *Cloves.*—In Upper Pambar starting from 1971, 2 ha. are planted each year with cloves seedlings at 3 m. x 3 m. espacement. The present stocking is about 50 per cent. The remoteness of the area though otherwise condusive for raising cloves affects the plantations by lack of closer supervision and attention.

SECTION 8.

FIRE PROTECTION.

284. The importance of protection of forests from fire has been recognised even as early as 1884. A system of external and internal fire lines was introduced in 1913 and the expenditure incurred was fairly high and the results also did justify the expenditure. Later in the name of economy internal fire lines were abandoned and fire tracing of frontier boundary only was undertaken along with fire patrol. The present practice is to fire trace state boundary and some important roads and paths through Reserved Forests which are frequently used and also the surroundings of forest timber depots. Fire lines are cut around the plantations in Kanyakumari district.

285. Fires are not common in plain forests but in ghat forests except shola and river valleys. The rest of the area get burnt, especially the outer fringes. This phenomena is on the increased with deterioration in respect for law and order among public. The areas reportedly burnt according to fire reports are grossly an under estimate. The punitive action of closure to grazing the fire burnt areas suspected to be of incendiarism has not been effectively enforced being neither possible nor practicable. So fire continues to be an important retarding factor for forest growth.

SECTION 9.

SPECIAL WORKS OF IMPROVEMENT UNDERTAKEN.

286. *Afforestation and plantations.*—The works of afforestation and raising plantations so far in the division have been dealt with.

287. *Roads.*—The following statement gives a list of forest roads and bridle paths constructed and maintained by the Forest Department in this division with details of costs and year of constructions.

Serial number and description.	*Length.*		*Cost of construction.*	*Year of construction.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
	MILES.	FURLONGS.	RS. P.		
1 Kalakad—Sivanaperi Road	1	1	648.00	1901	..
2 Sivanaperi—Mudalaruppan Road	3	1	3,523.00	1884–85 and 1899	..
3 Mudugani Bridle path	4	2	(not available)	Transferred from local fund.	..
4 Bridle path connecting Mudalaruppan, Sengaltheri, Nettikal and Nambiar sub-lines.	17	5	3,145.00	1899	..
5 Kopparai Cart track	2	4	1,025.00	1904–1905, 1906–1907	..
6 Pachiyar—Vadagarai Revenue Survey line ..	2	6	435.00	1904–1905	..
7 North cart track from Reserved Forest Boundary in Kalakad Fuel Series.	2	4	2,525.00	1920–21	..
8 South Cart track from Reserved Forest Boundary in Kalakad Fuel series.	2	2	2,500.00	1921–22	..
9 Tulakarparai Bridle Path	2	0	1,110.00	1909–10	..
10 Mudalaruppan to Mungilpattukidai Valley bridle path.	3	0	(not available)	..	..
11 Vadagarai—Arasapattu Road and extension ..	5	2	2,437.00	1906–1907 and 1917–1918	..
12 Kopparai Bridle path	1	1/8	410.00	1907–1908	..
13 Branch Road in Old coupe IV—Kalakad Fuel Series	0	21/2	205.00	1922–1923	..
14 Mudalaruppan to Old Coupe VII—Kalakad Fuel Series.	1	1	616.00	1909–1911	..
15 Cart track from the junction of the Reserved Forest to the Nazareth Rest House.	0	71/4	210.00	November 1936	..
16 Asambu Ditrict trace	19.18 miles		Transferred due to reorganisation of states.		..
17 Thoovatchi Nadugarai trace	8.5 miles				
18 Muthukuzhi—Mylani trace	10.75 miles				
19 Ulakarai trace	0.51 miles				
20 Road in Timber Depot at Nagercoil	..				

288. *Buildings and Wells* :—The following statement shows the list of buildings and wells constructed and maintained by the Forest Department in this division with details of costs and year of construction.

Serial number and description. (1)	*Locality.* (2)	*Year of construction purchase or acquirement.* (3)	*Cost of construction or purchase.* (4) RS. P.	*Remarks.* (5)
1 Range Office-*cum*-quarters	Alagiapandiapuram	1st November 1956 ££	14,325.00	£Acquired on reorganisation of states.
2 Forest Guards Quarters	Do.	Do.	4,885.00	Do.
3 Forest Watch Station	Thadikarankonam	1951–62	200.00	....
4 Do.	Aramboly	1st November 1956££	6,780.00	do.
5 Old Mahendragiri Range Office	Do.	Do.	17,008.00	Do.
6 Lac Shed	Thadikarankonam	1961–62	2,970.00	....
7 Mazdoor line	Valayathuvayal.	1962–63	4,748.00	....
8 Foresters' quarters	Thadikarankonam	1964–65	5,116.03	....
9 Do.	Alagiapandiapurams	1965–66	5,090.70	....
10 Lorry shed	Do.	1966–67	964.38	....
11 Mazdoor Line	Do.	1970–71	8,113.45	....
12 Muthukuzhi Palace	Veerapuli Reserved Forest	Not known	5,000.00	Dismantled during 1967–68
13 Range Officers' quarters	Kulasekaram	9th December 1959	18,931.06	Transferred from P.W.D.
14 Watch Station	Do.	1st November 1956 ££	1,300.00	££Acquired on reorganisation of states.
15 Do.	Mecode	Do.	730.00	Do.
16 Guards quarters	Ponamanai	Do.	680.00	Do.
17 Watch Station	Kaliel	Do.	622.00	Do.
18 Do.	Pechiparai—Modiramalai Road.	1964–65	840.00	....
19 Foresters' Quarters	Kulasekaram	1962–63 to 1963–64	8,082.00	....
20 Combined Forest Guards' and Watchers' quarters.	Chirukadathukam	1965–66	7,385.39	....
21 Watch Ststion	Upper Kodayar	1965–66	1,632.32	....
22 Do.	Lower Kodayar	Do.	1,749.00	....
23 Seed store Room	Kulasekaram	1966–67	2,165.00	....
24 Lorry shed	Do.	Do.	489.00	....
25 Mazdoor line	Pechiparai	1970–71	9,313.00	....
26 Range Office	Kulasekaram	9th December 1959	8,541.00	Acquired from P.W.D. dismantled in 1966–67.
27 Watch Shed	Do.	Do.	1,248.00	Acquired from P.W.D. Dismantled in 1964–65.
28 Sub-Line	Do.	Do.	5,107.00	Acquired from P.W.D. Disamantled in 1965–66.
29 Rest House	Sivananperi	1888–89	2,577.56	Dismantled in 1971-72 at Rs. 2,578.00.
30 Rest House	Sengaltheri	1906–1907	4,274.00	...

Serial number and description. (1)	*Locality.* (2)	*Year of construction purhcase or acquirement.* (3)	*Cost of construction or purchase.* (4)	*Remarks.* (5)
			RS. P.	
31 Rest House	Mettikal	1938	Free of cost.	....
32 Range Office	Sivanaperi	1898–99	2,254.00	....
33 Range Officers' Quarters	Do.	1898–99	2,484.14	....
34 Sub-line	Do.	1908–09	2,473.59	....
35 Do.	Koovapatti	1887	485.00	....
36 Do.	Numbiar Site	1916–17	1,787.00	....
37 Combined Forest Guards and Watchers Quarters.	Reddiarpuram	1960–61	6,400.00	....
38 Foresters' Quarters	Manimuthar	13th July 1961 (Purchased)	4,132.00	....
39 Guards' Quarters—4 Nos	Do.	13th July 1970 (Purchased)	9,118.00	....
40 Watchers Quarters—4 Nos.	Do.	13th July 1961 (Purchased)	9,118.00	....
41 Rest House	Do.	13th July 1960	9,606.00	....
42 Sentry Shed	Do.	1963–64	1,818.53	....
43 Rest House	Nazareth	1893–94	1,949.48	....
44 Forest Guards' Quarters	Vallanad	1958–59	2,971.00	....
45 Combined Forest Guards' and Watcher's Quarters.	Ottapidaram	1960–61	6,639.00	....
46 Do.	Kurumalai	1963–64	7,353.00	...
47 Range Officers' Quarters	Tirunelveli	1965–66	13,761.64	....
48 Foresters' Quarters	Do.	1967–68	7,427.29	....
49 Rest House	Vallanad	1893–94	1,195.00	Dismantled in 1966-67.
50 Temporary Office-*cum*-Shed	Pettai	1963–64	1,646.00	....
51 Depot Range Office-*cum*-Quarters	Nagercoil	1st November 1956	7,400.72	....
52 Depot Watchers' Quarters	Do.	Do.	4,812.00	....
53 Tally Shed	Do.	Do.	6,197.79	....

289. WELLS IN TIRUNELVELI SOUTH DIVISION.

Serial number and description. (1)	*Cost of or purchase construction.* (2)	*Year of construction or purchase.* (3)	*Remarks.* (4)
	RS. P.		
1 Well attached to the Range Office compound at Aramboly ..	1,500.00	Transferred from Ex-Travancore—Cochin State on 1st October 1956.	..
2 Well attached to the Range Office at Azhagiapandiapuram ..	2,006.98	Do.	..
3 Well at Nagercoil Timber Depot Compound	..	Do.	..
4 Range Officer's quarters at Kulasekaram	1,500.00	Do.	..
5 Well attached to Mecode Watch Station	250.00	Do.	..
6 Well attached to Forester's quarters at Kulasekaram	200.00	Transferred from P.W.D. on 9th December 1959.	..
7 Well attached to Watch Station at Kulasekaram	480.00	1961–62	..
8 Well in Rest House at Sivanaperi	151.00	1901–02	..
9 Well attached to combined quarters at Reddiapuram	620.00	1961–62	..
10 Well in the Rest House at Nazareth	54.00	1893–94	..
11 Well in the centre of Casuarina plantation in Teri R.F. ..	517.16	1942–43	..
12 Well at Melapattam	500.00 (Assessed value).	Taken over from P.W.D. on 15th October 1957.	..
13 Well at Muthur R.F.	600.00 (Assessed value).	Do.	..
14 Bore well with pump to the Sub-line at Uthupatty	660.77	1967–68	..

SECTION 10.

PAST REVENUE AND EXPENDITURE.

290. *Statement showing the revenue and Expenditure of Tirunelveli South Division for the 5 years period from 1968–69 to 1972–73.*

A. REVENUE.

Serial number and details. (1)	1968–69. (2)	1969–70. (3)	1970–71. (4)	1971–72. (5)	1972–73. (6)
1 Forest Produce removed by Government Agency	19,54,931.00	20,53,860.00	18,23,567.00	38,67,431.00	43,17,957.00
2 Timber and other produce removed from the Forest by consumers and purchasers.	17,58,251.00	15,57,344.00	16,48,889.00	14,57,331.00	15,21,300.00
3 Drift and waif wood and C.F.P.	6,412.00	7,762.00	2,833.00	1,558.00	975.00
4 Receipts from the management or Ex-Zamin Estates.	64,784.00	69,269.00	50,200.00	53,089.00	55,918.00
5 Fines and forfeitures	27,347.00	18,330.00	22,696.00	4,168.00	7,339.00
6 Rents on Buildings	2,373.00	2,305.00	2,557.00	2,959.00	3,926.00
7 Other sources	6,45,618.00	5,65,292.00	4,70,635.00	4,47,713.00	6,35,008.00
8 Panchayat Forests	1,13,825.00	4,244.00	1,95,890.00	4,01,195.00	56,025.00
Grand Total ..	45,73,541.00	42,78,406.00	42,17,267.00	62,35,444.00	65,98,448.00
Refund ..	3,800.00	8,943.00	325.00	2,935.00	1,128.00
Net Total	45,69,741.00	42,69,463.00	42,16,942.00	62,32,509.00	65,97,320.00

B. EXPENDITURE.

Serial number and details.	1968–69.	1969–70.	1970–71.	1971–72.	1972–73.
(1)	(2)	(3)	(4)	(5)	(6)
1 Forest Produce removed by Government Agency.	1,34,591.00	72,346.00	3,62,168.00	7,37,164.00	3,51,916.00
2 Timber and other produce removed from the Forest by consumers and purchasers.	2,308.00	3,656.00	4,159.00	3,362.00	3,760.00
3 Maintenance repairs and replacement of stores.	228.00	1,426.00	5,139.00	..	..
4 Communication and Buildings	8,643.00	8,547.00	9,519.00	9,445.00	7,747.00
5 Conservancy and regeneration	51,073.00	39,021.00	50,745.00	12,093.00	62,885.00
6 80C Establishment A District Establishment.	4,63,872.00	4,63,385.00	5,28,093.00	6,70,301.00	6,83,431.00
7 Scheme financed wholly by State Government.	7,472.00	8,298.00	8,882.00	10,372.00	10,574.00
8 70 d. Expenditure in connection with Ex-Zamindari Estate.	42,022.00	43,451.00	45,801.00	51,430.00	53,086.00
9 70. c. Development Scheme in Five-Year Plans I State Scheme.	1,497.00	4,085.00	3,024.00	3,296.00	3,453.00
10 119. a. Organisation, improvement and extension of forests.	24,310.00	26,589.00	20,394.00	17,372.00	15,010.00
11 119 e. Development Schemes Five-Year Plan Works A. State Scheme.	1,36,358.00	1,07,839.00	1,15,262.00	1,41,154.00	1,53,299.00
12 Scheme for Lac and Cashew cultivation (Centrally sponsored Scheme).	4,092.00	2,538.00	4,257.00	6,085.00	5,666.00
13 70. C.E. Rubber Plantations in Kanyakumari District.	8,426.00	18,154.00	37,435.00	..	1,35,170.00
	8,84,892.00	7,99,335.00	11,94,878.00	16,62,074.00	14,85,997.00

CHAPTER VI.

STATISTICS OF GROWTH AND YIELD.

SECTION 1.

FOREST RESOURCES SURVEY.

291. During the period 1969-72 a survey of the forest resources of Tirunelveli South Division was done by Thiru M. Dinakaran. He adopted line plot survey method with intensity 1 per cent (Plantations were excluded). He has given information on the distribution pattern in 30 cms.girthclass for various species occurring in each Reserved Forest viz. Number of trees ; their volume — Commercial, fuelwood and total. His report is available for Kanniyakumari district.

292. The above work having been completed immediately before starting this plan preparation no enumeration was done by the Working Plan Staff.

SECTION 2.

STATISTICS RELATING TO GROWTH OF TEAK.

293. *Natural Teak*—There are 3 distinct zones for Teak in this Division. In Kalakad and Singampatti Forests very slow grown Teak occurs naturally in gregarious patches. Slightly better areas are portions of Asambu proposed Reserves and Thadagamalai Reserves were medium size Teak comes up. The best teak areas in the division are in Veerapuli and Kalamalai Reserves.

294. The following statement shows the relationship between age and girth in the case ofnaturally occurring trees in the latter two regions mentioned above and the data is based on ring countings of Teak stumps in these localities. Wide variation in the rate of growth among different trees in the same region is also noticed and the following shows the average for a number of trees selected at random. In dry Teak region, the variation is too large to arrive at any dependable figures.

Age in years.	*Girth at breast height over bark.*	
	Asambu in cms.	*Veerapuli R.F. in cums.*
(1)	(2)	(3)
10	18.0	–
20	40.6	48.3
30	59.7	83.8
40	78.7	101.6
50	95.3	114.3
60	104.1	127.0
70	115.6	139.7
80	123.2	148.6
90	132.2	148.6
100	136.9	163.8
110	139.7	170.1
120	141.0	176.5
130	142.2	181.6
140	..	185.4
150	..	190.5
160	..	193.0

295. *Teak raised artificially.*—Teak planting was commenced in Kanyakumari District in 1921 as an experiment and it has been continued. But the planting has not been done systematically in that the annual regeneration area varies from 2 ha. in certain years to 70 ha. in another year and in certain years no planting was done. Thus plantations of all age gradations are not available. Further some plantations have been congested for want of timely thinnings while some have received heavier thinnings. Site conditions also vary considerably. The above factors have caused wide variation in the girth and height increment of the plantations.

296. Thus being not sure of the rate of growth S.A. Rahmatullah in 1959 tentatively find the rotation period as 40 years and stated that a decision on the final rotation may be taken after 20 years based on statistics gathered at the Proposed Research Centre at Thadikarankonam. The State Silviculturist has opened sample plots but unfortunately sufficient data has not been collected. The Officer-in-charge, Management and Mensuration Branch o whom the data was present has said that with the present available data it is not possible to fix the rotation age.

297 .Because of the above said resons the growth rate of teak plantations could not be judged even now. Most of the platations may confirm to All India IV quality. Successful Teak plantation can be raised if properattention is given in selection of site andtimely silviculture operations are carried out,especially weeding, climber cutting and thinning. However the general opinion is that the the has not performed well in Kanyakumari district and teakplanting itself has been suspended during this plan period.

SECTION 3.

STATISTICS RELATING TO GROWTH OF SOFTWOOD.

298. In Kanyakumari District Bombax malabaricum has been raised artificially from 1957 and later Ailanthus malabaricum, Albizzia falcata and Ceiba pentandra have been introduced. No sample plots have been laid for studying the growth of these species.

299. The plantations do not seem to have had proper attention. Invasion of weeds and climbers smothering the main species as greately affected the growth and percentage of survival. There is wide variation in growth of trees within the same plantations and also from plantation to plantation irrespective of age. They do not lend themselves susceptible for any scientific study of growth.

300. Albizzia falcata seems to be more promising. Even here there is wide variation within the same plantation, peripheral trees growing considerably big and those within growing blanky attaining not even half the size in growth. These peripheral trees tend to give false propotion that the trees are very fast growing and capable of yielding large volume.

301. From plantation to plantation the variation in growth and survival percentage is marked as could be seen in the Tabular Statement given below :—

Year of Plantation.	*No. of trees per ha.*	*Average diametre.*	*Average height.*	*Form factor.*	*Volume*	*M.A.I.*
1. 1964	460	12.0cms.	19.0m.	0.6	57m^3	5.7m^3
2. 1967	400	17.5cms.	18.0m.	0.6	104m^3	15.0m^3
3. 1968	220	24.5cms.	23.5m.	0.6	145m^3	24.0m^3
4. 1969	250	12.5cms.	16.0m	0.6	30m^3	6.0m^3

Outturn tables for teak and other exploitable timber species of Kanyakumari forests prepared by

S. A. RAHMATULLAH.

Figures relating to the actual outturn of timber after conversion according to local practice and the corresponding girth of trees at breast height abstracted from Form 3 register were grouped in 15 cms. girth classes and averaged and curves relating these two were drawn. The relationship between the avarage outturn of timber and the corresponding mean girth is given in the following table:—

Girth of the tree in cms. at breast height.	*Tectona grandis.*	*Terminalia paniculata.*	*Terminalia tomentosa.*	*Pterocarpus marsupium.*	*Lagerstroemea lanceolata.*	*Dalbergia latifolia.*	*Bridelia retusa.*
75	0.130	0.091	0.113	0.142	0.085	0.071	0.099
90	0.226	0.192	0.212	0.170	0.142	0.142	0.184
105	0.340	0.303	0.396	0.243	0.255	0.212	0.269
120	0.458	0.425	0.425	0.325	0.396	0.297	0.354
135	0.594	0.549	0.552	0.430	0.566	0.396	0.467
150	0.722	0.696	0.679	0.518	0.750	0.481	0.594
165	0.855	0.821	0.849	0.665	1,075	0.637	0.750
180	1.019	0.991	1.024	0.792	1.415	0.807	0.948
195	1.208	1.146	1.194	0.933	..	1.019	1.189
210	1.415	1.330	1.395	1.344	..	1.274	1.528
225	1.670	1,571	1.641	1.500	..	1.627	1.868
240	2.038	1,868	1.868	1.387	..	2.023	..
255	2.604	2.179	2.151	1.585	..	..	..
270	..	..	2,604	1,881	..	..	..

PART II.

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER I—BASIS OF PROPOSALS.

SECTION 1—GENERAL OBJECTS OF MANAGEMENT.

303. The general objects of management will be

(1) To conserve and improve the forests in the interests of soil conservation, water supply and agriculture.

(2) To exploit on sound principles of silviculture, the resources of the forests in timber, fuel, bamboo, reeds, pasture and minor forest product.

(3) To supply the requirements of the local forest based industries and the local population their needs of forest produce to the extent possible, without sacrificing principles of forest conservancy.

(4) To enhance the value of the existing forest stand by conversion into valuable plantations of softwood, Pines, Eucalyptus species and Acacias suitable to the locality, wherever possible.

(5) To augument the forest resources by creating forests in suitable areas along the river and canal fringes, in tank beds and porambokes.

(6) To protect the wild life and provide them the basic essentials of existence and to develop the sanctuary.

SECTION 2—METHODS OF TREATMENT TO BE ADOPTED.

304. The methods of treatment to be adopted varies with each of the Working Crieles and are described in detail in the following chapters. Prescriptions and suggestions on matters not covered by the different Working Circles are indicated in the chapter on "Miscellaneous Regulations".

SECTION 3—WORKING CIRCLES AND THIER CONSTITION,

305. To achieve the objects of management the following Working Circles have been canstituted (area set apart for rubber forms a separate unit and is excluded from this plan).—

Serial number and name of the working circle.	*Area in ha.*
(1)	(2)
1 Teak Working Circle	2,136.7
2 Softwood Working Circle	2,324.7
3 Fuel Working Circle	3,951.8
4 Reafforestation Working Circle	2,159.7
5 Teri Forest Regulation working Circle	1,560.8
6 Bamboo Working Circle	..
7 Grazing Working Circle	..
8 Minor Forest Produce Working Circle	..
9 Prodection Working Circle	...

Teak Working Circle : 2,136.7 ha.

305. This consists of all the existing teak plantations in Kanyakumari district. The plantations will be maintained and improved adopting sound silvicultural prinicples taking into consideration the present condition of each plantation.

2. *Softwood Plantation Working Circle* : 2,324.7 ha.

307. This will comprise all the existing softwood plantations in Kanyakumari district and areas which are suitable for regeneration. The existing plantations will be improved by tending, thinning and restocking if necessary and in addition suitable areas other than those earmarked for rubber will be planted with Albizzia falcata.

3. *Fuel Working Circle* : 3,651,8 *ha.*

308. This consists of selected areas on the eastern slope of Mahendragiri, Kalakad and Singampatti forests. To a limited extent this will supply fuel and small timber for the local population.

4. *Reafforestation Working Circle* : 2,159.7 *ha.*

309. The forest areas which have been subjected to excessive felling, over-grazing and uorest fires, but all the same support some soil where the existing stand can be replaced by more useful species by intensive regeneration, have been brought under this Working Circle.

5. *Teri Forest Regeneraton Working Circle* : 1,560.8 *ha.*

310. Selected areas in Kudiraimozhi Teri Reserved Forest and Sathankulam Reserved Land which are now barren will be regenerated with usefull species by adopting advanced technique and thereby stop wind erosion and contain the shifting sand.

6. *Bamboo Working Circle.*

311. This covers all the Bamboo bearing areas in Kanyakumari Distsict and suitable areas in the fringes of Pechiparai lake fit for Bamboos.

7. *Grazing Working Circie.*

312. This includes all the forests in the division except those areas closed to grazing for silvicultural and administrative reasons.

8. *Minor Forest Produce Working Circle.*

313. This comprises all the forests covered by the Working Plan except the area leased to Bombay Burma Trading corporation.

9. *Production Working Circle.*

314. The forests not included in any other Working Circle except items (7) and (8) above form this Working Circle. These areas will be protected from fire and felling to prevent their deterioration and denudation.

SECTON 4 — PERIOD OF THE PLAN

315. This Working Plan will be in force for a period of 10 years from 1st April 1976 Prescriptions and suggestions are given for the succeeding 5 years for any eventuality of continuance of the plan.

CHAPTER II—WORKING PLAN FOR THE TEAK WORKING CIRCLE.

SECTION I—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

316. *Obeicts of Management*—The object of this Working circle is just to manage profitably the existing teak Plantations as no planting is proposed during this plan period.

317. *General Consititutoin*—The Working Circle consists of all the Existing teak plantations in Kanyakumari District. Teak planted in Canal banks and River Fringe and older plantation in Singampatty forests in Tirunelveli District are dealt with separately.

318. *Area*—The area of the Working Circle is 2, 136.7 ha. A detailed statement showing particulars of the teak plantations is given below —

Serial Nnmber.	*Name of the plantation.*	*year of plantation.*	*Area planted in ha.*
(1)	(2)	(3)	(4)
	Achaglapandiapuram Series.		
1	Paraliar	1921	13.8
2	Do. ..	1925	13.8

(1)	(2)	(3)	(4)	(5)
3	Do.	..	1926	24.3
4	Do.	..	1927 2 Bits.	10.5
5	Do.	..	1931 2 Bits.	1.9
6	Do.	..	1932 2 Bits.	7.4
7	Do.	..	1933	5.1
8	Do.	..	1934	1.2
9	Do.	..	1935 2 Bits.	4.5
10	Do.	..	1936	2.1
11	Do.	..	1937	2.6
12	Thadikarankonam		1942	4.2
13	Do.	..	1943	10.1
14	Do.	..	1944	21.0
15	Do.	..	1945	24.0
16	Do.	..	1946	29.9
17	Paraliar ..	..	1954	38.9
18	Do.	..	1957	49.4
19	Do.	..	1958	10.5
20	Thadikarankonam		1959	42.9
21	Do.	..	1959	39.7
22	Paraliar ..	..	1959	70.8
23	Do.	..	1960	51.0
24	Thadikarankonam		1960	54.2
25	Do.	..	1961	21.4
26	Paraliar ..	..	1961	28.7
27	Do.	..	1962	28.3
28	Thadikarankonam		1962	29.5
29	Kalkulam Grazing Block I.		1963	48.5 (failure.)
30	Do. Block II	..	1963	44.5 (failure.)
31	Paraliar ..	..	1963	26.7
32	Do.	..	1964	38.9
33	Kalikaramthottam		1964	43.7
34	Paraliar ..	..	1965	31.2
35	Do.	..	1966	24.7
36	Thadikarankonam		1966	40.4
37	Perunchani Water spread area (3 bits).		1966	15.8
38	Thadikarankonam		1967	44.5
39	Paraliar ..	..	1967	23.1
40	Do.	..	1968	29.5
41	Thadikarankonam		1968	47.3
42	Do.	..	1969	41.1
43	Neduvilai ..	..	1969	10.0 (failure.)
44	Paraliar ..	..	1969	32.5

45	Do. ..	1970	29.7
46	Velimalai ..	1970	43.5
47	Do. ..	1971	10.0
48	Thadikarankonam	1971	2.5
49	Paraliar	1971	35.3
50	Do. ..	1972	15.0
51	Velimalai	1972	33.0
52	Do. ..	1973	40.8
			1,393.9

Kulasekaram Series.

1	Manalodai	1943	19.4
2	Do. ..	1946	23.5
3	Kodayar	1958	44.5
4	Do. ..	1959	39.7
5	Do. ..	1960	49.4
6	Do. ..	1961	61.5
7	Do. ..	1962	69.2
8	Do. ..	1963	50.2
9	Do. ..	1964	55.9
10	Do. ..	1965	28.3
11	Do. ..	1966	34.0
12	Do. ..	1967 (2 Bits.)	55.9
13	Do. ..	1968 (2 Bits.)	48.3
14	Do. ..	1969	43.5
15	Do. ..	1970	41.1
16	Do. ..	1971	23.1
17	Do. ..	1972	17.4
18	Manalodai	1972	18.7
19	Kodayar	1973	19.2
			742.8

319. *Character of the vegetation.*—Moist deciduous type of forest which supported timber species like Tectona grandis, Dalbergia latifolia, Terminalia paniculata, Terminalia tomentosa Lagerstroemia lanceolata, Pterocarpus marsupium, Grewia, tilaefolia, Adina cordifolia, Schleicjea trijuga, etc., have been converted into teak plantations. The teak plantations excepting a few are not as promising as they should be considering the locality factors. Keeping the area free from weeds and climbers which impeds the growth has not been given due attention whether raised under Kumri or not. The Kumridars after benefiting fully from the lease leave the area without clearing the unwanted growth. Further there is a tendency for them to prune the branches and leaves of teak. As soon as the agriculture crop is removed suddenly weeds and climbers invade and cause suppression of teak. Frequent fires caused by negligence or mischief has caused severe damage by killing young seedlings and rendering conditions favourable for the invasion of coarse Grass. Some of the good plantations have suffered from congestion without adequate thinning. The above facts have contributed to the poor performance of teak. So the Working Plan was led to inescapable conclusion that odds are heavily against raising good teak plantation successfully. However it was decided not to plant teak during this plan period.

SECTION 2.—DIVISION OF THE AREA.

320. The Working Circle is divided into two planting series viz.,Kulasekaram and Azhagiar pandiapuram. The plantations in Kulasekaram Range will be called Kulasekaram series and the plantations in Azhagiapandiapuram series.

SECTION 3.—ANALYSIS OF THE CROP.

321. *Stockmapping.*—The Plantations were thoroughly inspected and ocularly stock mapped based on ehich tending and thinning are prescribed.

SECTION 4.—METHOD OF TREATMENT.

322. *Silvicultural System.*—Though the original silvicultural system was clearfelling followed by artificial regeneration with teak, now it is only maintenance of existing plantations.

323. *Choice of species.*—Teak has been raised.

324. *Rotation.*—The locality can produce IV quality teak. The age maximum CA·I and MAI is over eighty years. So the rotation is fixed as 80 years tentatively.

325. *Regulation of yield.*—None of the existing plantations scome of rotation age during this plan period so no clearfelling of any of the existing plantations is contemplated. The yield will be only from thinnings prescribed in paragraph 331.

SECTION 5—SILVICULTURAL REGULATIONS.

326. The existing plantations will be improved and maintained by carrying out tending and thinning operations as each plantation needs.

327. Tending will consist of clear weeding the whole area, cutting of climbers, uprootal of lantana and bamboos and cutting back of all damaged teak saplings. The tending operations are prescribed for one year only and by these the neglected plantation will be set-right. Thereafter such operation to the extent necessary can be carried out in any of the younger plantations midway between thinnings.

222

328. *Tending:—Schedule.*

Year of tending.	*Name and year of plantation.*		*Area in hectarres.*
(1)	(2)		(3)
1976-77	Velimalai	1971	10.00
	Do.	1972	33.00
	Do.	1973	40.80

329. *Thinning.*—In the past attention has not been paid to timely thinnings. The thinning cycle prescribed during the previous plan was at pa ages 6, 12, 19 and 29 when the planting was to be done at 1.8 metres espacement. The first thinning was mechanical and the rest silvicultural. Lately planting has been done at 2m. × 2m. espacement and therefore the thinning cycle is slightly modified as follows : 6, 12, 20, 30 and the final thinning at 40. The first thinning as usual will be mechanical and the rest will be silvicultural and the degree of thinning will be " C " grade.

Age	*Number of trees.*		*Espacement after thinning.*	*Remarks.*
	Before thinning.	*After thinning.*		
(1)	(2)	(3)	(4)	(5)
6	2,500	1,250	2,80 m.	Mechanical.
12	1,250	850	3.30 m.	
20	880	610	4.05 m.	
30	610	485	4.50 m.	
40	485	310	5.70 m. ..	The final crop will be about 28 giving 10 per cent allowance for natural losses

Marking rules for thinning :

330. (i) The mechanical thinning will be carried out by the Range Officer :

(ii) Marking for silvicultural thinning will be done by the District Forest Officer or his gazetted Assistant. Every tree to be felled will be marked with his personal hammer by a basal blaze, so that the authority for its removal will be apparent even after the tree is extracted. Felling of marked stems should follow closely on the marking itself so that the marking officer can immediately see for himself the faults of his marking ;

(iii) A climber cutting and removal of parasites from the tree should precede every thinning and the marking officer should ensure that these operations have been carried out properly before he commences marking. The parasites should be effectively destroyed preferably by burning.

(iv) Suppressed stems or saplings of miscellaneous species forming a natural understorey should not be cut unless they interfere with the teak, as they are expected to form a soil cover and assist in the biological control of defoliation.

331. *Thinning programme.*—The following statement gives programme of thinnings to be followed during the plan period, taking into consideration past thinnings and present condition of the plantions:—

SCHEDULE.

Year of thinning.	*Name and year of plantation.*		*Area in hectares.*
(1)	(2)		(3)
	KULASEKARAM RANGE.		
1976–77	Manalodai	1946	23.5
	Kodayar	1964	55.2
	Do.	1970	41.1
1977–78	Do.	1965	28.3
1977–78	Do.	1965	28.3
	Do.	1971	23.1
1978–79	Do. (Thudalikadu).	1958	44.5
	Kodayar	1966	34.0
	Manalodai	1972	18.7
	Kodayar	1972	17.4
1979–80	Do. (Thudalikadu).	1959	39.7
	Kodayar	1967	55.9
	Do.	1973	19.2
1980–81	Do.	1960	49.4
	Do.	1968	48.3
1981–82	Do.	1961	61.5
	Do.	1969	43.5
1982–83	Kodayar	1962	69.2
	Do.	1970	41.1
1983–84	Manalodai	1943	19.4
	Kodayar	1963	56.2
	Do.	1971	23.1

Year of thinning. (1)	*Name and year of plantation.* (2)		*Area in hectares.* (3)
1984–85	Kodayar.	1964	55.9
	Do.	1972	17.4
	Manalodai	1972	18.7
1985–86	Kodayar	1965	28.3
	Do.	1973	19.2
1986–87	Manalodai	1946	23.5
	Kodayar	1966	34.0
1987–88	Do.	1967	55.9
1988–89	Do. (Thudalikadu).	1958	44.5
	Kodayar	1968	48.3
1989–90	Do.	1959	39.7
	Do.	1969	43.5
1990–91	Do.	1960	49.4
	Do.	1970	41.1
	AZHAGIAPANDIAPURAM RANGE.		
1976–77	Paraliar	1931	1.9
	Do.	1932	7.4
	Do.	1933	5.1
	Do.	1934	1.2
	Do.	1935	4.5
	Do.	1936	2.1
	Thadikarankonam	1945	24.0
	Do.	1946	29.9
	Paraliar	1964	38.9
	Kolikaranthottam	1964	43.7
	Paraliar	1970	29.7
	Velimalai	1970	43.5
1977–78	Paraliar	1937	2.8
	Do.	1957	49.4
	Do.	1965	31.2
	Velimalai	1971	10.0
	Thadikarankonam	1971	2.5
	Paraliar	1971	35.3
1978–79	Paraliar	1958	10.5
	Thadikarankonam	1958	42.9
	Paraliar	1966	24.7
	Thadikarankonam	1966	40.4
	Perunchani Waterspread Area	1966	15.8
	Paraliar	1972	15.0
	Velimalai	1972	33.0

சென்னை.6,முதன்மை வனத்துறைத் தலைவரின் 14.12.1988ந்தேதிய
கடித மு.மு.எண்.ஞ3/63543/85-ன்நகல்.

--

பொருள்: செயல் திட்டம்-1984.85ல் கன்னியாகுமரி கோட்டத்தில்
தேக்கு தோட்டத்தில் மெலித்தல்(thinning)பணி
மேற்கொள்ளப்படாதது-செயல் விலகல் பிரேரணை-அங்கீகரித்தல்-தொடர்பாக.

பார்வை:1)மாவட்ட வன அலுவலர்,நாகர்கோவில் எண்.9020/85.டி1
நாள் 11.6.85.

2)வனப்பாதுகாவலர்,திருநெல்வேலி எண்.13812/85.எல்,
நாள் 2.7.85.

3)வனப்பாதுகாவலர்,வனச்செயல் திட்டம் எண்.டி3/
12186/85,நாள் 22.2.86.

--

கன்னியாகுமரி கோட்டத்தைச் சார்ந்த வனச்செயல் திட்ட குறிப்புரை பத்தி 331-ல் குறிப்பிட்டபடி தேக்குத் தோட்டங்களில்,மெலித்தல்(Thinning பணி செய்யப்படாத தோட்டங்களால் ஏற்பட்ட செயல் விலகல் பிரேரணை அங்கீகரிக்கப்படுகிறது.

இருப்பினும்,இக்கோட்டத்தில் 1984.85 மற்றும் 1985.86-ல் இன்னும் மெலித்தல் பணி செய்யப்பட வேண்டிய நிலுவையிலுள்ள தேக்குத் தோட்டங்களை கணக்கெடுத்து,அனைத்து தோட்டங்களிலும் மெலித்தல் பணி மேற்கொள்ள தேவையான அனைத்து சிறப்பு நடவடிக்கைகளையும் வனப்பாதுகாவலர் மேற்கொள்ளப்பட வேண்டியது. இதில் வனப்பாதுகாவலர்,தனி அக்கறையும் செலுத்த கேட்டுக் கொள்ளப்படுகிறார். இம்மெலித்தல் பணி மேற்கொள்வதில் நிதி பற்றாக்குறைவு ஏற்படில் முதன்மை வனத்துறைத் தலைவருக்கு எழுதி உடன் பெற்று பணியினை நிலுவையின்றி முடிக்க வேண்டியது.

கே.அருணாசலம்,
முதன்மை வனத்துறைத் தலைவருக்காக.

பெறுநர்/-
வனப்பாதுகாவலர்,வனச்செயல் திட்டம்,திருச்சி.
நகல்:-1.வனப்பாதுகாவலர்,திருநெல்வேலி மண்டலம்.
2.மாவட்ட வன அலுவலர்,கன்னியாகுமரி கோட்டம்,நாகர்கோவில்.
3.ஞ3 இருப்புக் கோப்பிற்கு.
(உண்மைப்படி)

தொலைபேசி எண்.40536
மே.கு.எண்.வ2/281/89. வனப்பாதுகாவலர் அலுவலகம்,செயல்திட்ட
மண்டலம்,எண்.60,3ம் பிரதானவீதி,பொன்நகர்,
திருச்சி.620 001,நாள் 9.1.89,மார்கழி
25,விபவ,தி.வ.ஆ.2019.

நகல்:-வனச்செயல் திட்ட இருப்புக் கோப்பிற்கு.
நகல்:-வனச்செயல் திட்டம்.
நகல்:-உரிய கடிதங்களுடன் லெட்ஜருக்கு.

எல்.நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி.உத்திரவுப்படி)

வேணு. லக்ஷ்மி நரசிம்மன்
முதநிலை வரைதொழில் அலுவலர்

பிம.10/1

Year of thinning. (1)	*Name and year of plantation.* (2)		*Area in hectares.* (3)
1979–80	Thadikarankonam	1959	39.7
	Paraliar	1959	70.8
	Thadikarankonam	1967	44.5
	Paraliar	1967	23.1
	Velimalai	1973	40.8
1980–81	Paraliar	1960	51.0
	Thadikarankonam	1960	54.2
	Paraliar	1968	29.5
	Thadikarankonam	1968	47.3
1981–82	Thadikarankonam	1961	21.4
	Paraliar	1961	28.7
	Thadikarankonam	1969	41.1
	Naduvilai	1969	10.0
	Paraliar	1969	32.5
1982–83	Thadikarankonam	1942	4.2
	Paraliar	1962	28.3
	Thadikarankonam	1962	29.5
	Paraliar	1970	29.7
	Velimalai	1970	43.5
1983–84	Thadikarankonam	1943	10.1
	Kalkulam Grazing Bit I	1963	48.5
	Kalkulam Grazing Bit II	1963	44.5
	Paraliar	1963	26.7
	Velimalai	1971	10.0
	Thadikarankonam	1971	2.5
	Paraliar	1971	35.3
1984–85	Thadikarankonam	1944	21.0
	Paraliar	1954	38.9
	Do.	1964	38.9
	Do.	1964	38.9
	Kolikaranthottam	1964	43.7
	Paraliar	1972	15.0
	Velimalai	1972	33.0
1985–86	Thadikarankonam	1945	24.0
	Paraliar	1965	31.2
	Velimalai	1973	40.8
1986–87	Thadikarankonam	1946	29.9
	Paraliar	1966	24.7
	Thadikarankonam	1966	40.4
	Pernuchani	1966	15.8
1987–88	Paraliar	1957	49.4
	Thadikarankonam	1967	44.5
	Paraliar	1967	23.1

Year of thinning. (1)	*Name and year of plantation.* (2)		*Area in hectares.* (3)
1988–89	Paraliar	1958	10.5
	Thadikarankonam	1958	42.9
	Paraliar	1968	29.5
	Thadikarankonam	1968	47.3
1989–90	Do.	1959	39.7
	Paraliar	1959	70.8
	Thadikarankonam	1969	41.1
	Neduvilai	1969	10.0
	Paraliar	1969	32.5
1990–91	Paraliar	1960	51.0
	Thadikarankonam	1960	54.2
	Paraliar	1970	29.7
	Velimalai	1970	43.5

332. *Exploitation of thinned produce.*—The thinned produce will be classified as given in chapter IV Part I.

333. Trees above 90 cms. girth will be treated as logs and measured in volume and sent to the Timber Depot, Nagercoil for sale. The rest of the poles will be sold in auction at site. Miscellaneous growth and top ends of teak will be converted into fuel and stacked in size of 2 m x 1 m x 1 m and sold at site, if there is demand.

SECTION 6—OTHER REGULATIONS.

334. *Plantation Board.*—Every plantation should carry at the salient corners of its periphery consbicuous boards showing the calendar year of its formation and its area. Such of these boards that require replacement will be renewed in the month of April every year.

335. *Inspection paths.*—Permanent and properly graded inspection paths 2 m wide already formed in each plantation should be kept clean of all growth to facilitate inspection.

336. *Fire Protections.*—All plantations will be protected against fire by an exterior line 5 m. wide which will be cut and burnt every year and by annual clearing of internal boundaries between plantations to a width of 3.5 metres. All burning of fire lines should be completed by the 31st January. Late burning of fire lines may result in serious fires in the plantations. It is therefore important that late burning is never resorted to.

337. *Control.*—A control book, record of works, register of deviations control journal, control maps and plantation journals will be maintained for this working circle. The manner in which these records are to be maintained are indicated in sections under the Chapter on Miscellanous Regulations.

CHAPTER—III—WORKING PLAN FOR SOFTWOOD WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION AND CHARACTER OF THE VEGETATION.

338. *Object of Management.*—The object is to meet the growing need of several match factories in Kanyakumari, Tirunelveli and Ramanathapuram Districts and also the requirements of fishermen for catamarans.

339. *General constitution.*—This Working Circle includes all the areas which have been hitherto planted with softwood in Kanyakumari District and the areas at present supporting natural forest considered suitable for raising softwood.

(104)

சென்னை.6,முதன்மை வனத்துறைத் தலைவர் அவர்களின் 21.11.88ந் தேதிய கடித ந.மு.எண்.ஏ3/127542/82-ன் நகல்.

--

பொருள்: வனச் செயல் திட்டம் - அல்பீசியா பிளாக்டேடக் 1978-79-ல் வேலை செய்யாமை-மாறுபாடு கருத்துரு சமர்ப்பித்தல்-அங்கீகரிக்க வேண்டுதல்-தொடர்பாக.

பார்வை: 1.மாவட்ட வன அலுவலர்,கன்னியாகுமரி எண்.9152/80-எல், நாள் 30.12.81.

2.வனப்பாதுகாவலர்,திருநெல்வேலி எண்.1328/79-எல் நாள் 9.12.82.

3.வனப்பாதுகாவலர்,வனச்செயல் திட்டம், திருச்சி எண்.டி1/17746/83, நாள்9.2.84 மற்றும் 9.2.87.

--

1968 பாலமோர் காட்டில் ஏற்படுத்தப்பட்ட ஒரு ஹெக்டேர் அல்பீசியா பிளாக்டேடக் 8.8.81 அன்று ஆராய்ச்சி பிரிவிற்கு மாற்றிவிட்டபடியால், இத்தோட்டத்தில் 1978.79ம் ஆண்டில் வனச் செயல் திட்டப் பணியான வெட்டுதல் (Felling)பணி மேற்கொள்ளாமையால் ஏற்பட்ட செயல் விலகல் பிரேரணை அங்கீகரிக்கப்படுகிறது.

நா.கிருஷ்ணமூர்த்தி,
முதன்மை வனத்துறைத் தலைவருக்காக.

பெறுநர்/- வனப்பாதுகாவலர்,வனச்செயல் திட்டம்,திருச்சி.

நகல்:-1.வனப்பாதுகாவலர்,திருநெல்வேலி மண்டலம்.

2.மாவட்ட வன அலுவலர்,கன்னியாகுமரி மாவட்டம்,நாகர்கோவில்.

3.ஏ3 இருப்புக் கோப்பிற்கு.
(உண்மைப்படி)

தொலைபேசி எண்.40536

எண்.வ2/10259/87.

வனப்பாதுகாவலர் அலுவலகம்,செயல்திட்ட
மண்டலம்,எண்.60,3ம் பிரதான வீதி,
பொன்னகர்,திருச்சி.620 001,நாள்
15.12.88/கார்த்திகை 30,விபவ,
தி.வ.ஆ.2019.

நகல்:- வனச்செயல் திட்ட இருப்புக் கோப்பு.
நகல்:- வெட்ஜருக்கு(உரிய கடிதங்களுடன்.)
நகல்:- வனச்செயல் திட்டம்.
உதிரி-1.

எஸ்.நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி. உத்திரவுப்படி)

20/12

பிம.19/12.

முதுநிலை வரைதொழில் அலுவலர்

20/12

Area.—2324.7 ha.

340. *Character of the Vegetation.*—The area selected for convenersion mostly contains secondary growth in the moist deciduous type, the original growth having been cleared for coffee cultivation and abandoned or by the Kanis in their shifting cultivation The Principal species occurring are Dalbergia latifolia, Terminalias, Scleichera trijuga, etc., and the blanks without tree growth are infested with coarse grass.

SECTION 2—DIVISION OF THE AREA.

341. The Working Circle will consists of two planting series named after the Ranges in which they mostly fall viz. Kulasekaram and Azhagiapandiapuram. All the existing plantations and future areas in Kulasekaram Range will constitute Kulasekaram series and those in Azhagia pandiapuram and Boothapandi Ranges will constitute Azhagiapandiapuram Series.

Serial number and name of series. (1)	*Planted area.* (2) HA.	*Future area.* (3) HA.
1 Kulasekaram	728.10	611.30
2 Azhagiapandiapuram	527.20	458.10*

* This includes 49.60 ha. of 1958 plantation which is a failure.

SECTION 3—ANALYSIS AND VALUATION OF THE CROP.

342. *Stockmapping.*—Ocular stockmapping of the areas suitable for conversion into match wood was done. In the existing plantations sample enumeration and stockmapping were carried out. The details of existing plantations are furnished in the statement given below :—

Softwood plantations.

Serial number and name of the Plantations. (1)	*Year of Planting.* (2)	*Area in ha.* (3)	*Species raised.* (4)
		Azhagiapandiapuarm Series.	
1 Kani Abandoned area ..	1958	31.60	Bombax malabaricum.
2 Balamore	1958	50.10	Do.
3 Kaliksam	1960	50.00	Do.
4 Balamore	1965	41.30	Do.
5 Ponmanai village	1966	11.30	Do.
6 Ponmanai village	1966	18.60	Do.
7 Balamore	1967	22.30	Do.
8 Balamore	1968	24.70	Do.
		1.00	Albizzia falcata
9 Do.	1969	24.80	Bombax malabaricum.
10 Do.	1970	23.30	Do.
11 Do.	1970	7.70	Albizzia falcata.
12 Do.	1971	26.50	Do.
13 Do.	1972	30.10	Bombax malabaricum.
14 Do.	1973	27.30	Do.
15 Keeriparai	1974	4.00	Albizzia falcata.
16 Velimalai	1974	78.80	Do.
17 Do.	1975	67.00	Do.
18 Balamore	1975 (2 bits).	36.40	Do.
		527.20	

Kulasekaram Series.

(1)	(2)	(3)	(4)	
1 Veerapuli (Korva Kuzhi).	1957	24.30	Bombax malabaricum—failure	
2 Kaduva vetti	1959	27.80	Bombax malabaricum	
			Ailanthus malabaricum	
			Scheleichere cleosa	
3 Thudalikadu	1959	53.40	Bombax malabaricum	
			Ailanthus malabaricum	
4 Veerapuli	1960	32.80	Bombax Malabaricum	
			Ailanthus malabaricum	
5 Veerapuli	1961	32.80	Bombax malabaricum	
			Ailanthus malabaricum	
6 Veerapuli	1961	50.10	Bombax malabaricum	
			Ailanthus malabaricum	
7 Veerapuli	1962	41.70	Bombax malabaricum	
			Ailanthus malabaricum	
8 Veerapuli	1963	49.80	Bombax malabaricum	
			Ailanthus malabaricum	
			Albizzia falcata	
9 Veerapuli	1964	17.00	Bombax malabaricum	
			Albizzia falcata	
10 Veerapuli	1965	26.70	Bombax malabaricum	
			Ailanthus malabaricum	
11 Veerapuli	1966	42.10	Bombax malabaricum	
			Ailanthus malarbaricum	
				Hactares
12 Veerapuli	1967	62.70	Bombax malabaricum	41.48
			Albizzia falcata	21.24
13 Veerapuli	1968	59.10	Bombax malabaricum	38.26
			Ailanthus malabaricum	
			Albizzia falcata	20.84
14 Veerapuli	1969	42.50	Bombax malabaricum	29.95
			Albizzia falcata	12.55
15 Mugilayadi	1969	10.50	Albizzia falcata	
16 Veerapuli	1970	58.80	Bombax malabaricum	38.55
			Ailanthus malabaricum	
			Ceiba pentandra	20.2

17 Veerapuli	1971	48.20	Bombax malabaricum ... Ailanthus malabaricum Albizzia falcata ..	34.10 14.10
18 Veerapuli	1972	47.80	Bombax malabaricum Ailanthus malabaricum Albizzia falcata	
		728.10		

Interplanted with Albizzia falcata during 1975.

343. Most of the plantations have not fared well and the contributory cause is neglect to do tending and thinning when required and the resultant suppression by weeds and congestion in the crop itself, aggravated by yearly fire.

SECTION 4—METHOD OF TREATMENT.

344. *Silvicultural system.*—The silvicultural system to be adopted is clearfelling followed by concentrated artificial regeneration with matchwood species. The following species have been planted viz. Bombax malabaricum, Ailanthus malabaricum, Albizzia falcata and Ceiba pentendra. Albizzia falcata has given better results. It is fast growing giving about 20m^3/hectare/year. It is in great demand for match splints and catamarans, Bombax malabaricum still holds its place because of its utility for match veneers and as well as splints. Both these species are useful for making tea chests and packing cases. The other species do not compare well in merits. For fresh planting in the plan period Albizzia falcata is the only species chosen. The existing plantations will be maintained and improved by tending, thinning and restocking of blanks with Albizzia falcata according to the condition of each plantation.

345. *Rotation.*—The rotation tentatively fixed in the previous plan was 25 years when the final crop would be expected to attain an average girth of 150 cms. but the girth increment is less than expected so the rotation can be increased to 35 years for Bombax ceiba : for Albizzia falcata the rotation will be 10 years and the rate of growth indicates that the final crop will attain average girth of 60 cms. at breast-height and 20 m. merchantable height.

346. *Regulation of yield.*—The yield be will regulated by area.

SECTION 5—METHOD OF EXECUTING FELLINGS.

347. *Demarcation and survey.*—The annual coupes to be clearfelled as marked on the map will be laid out on the ground demarcated by a cut line 2m. wide and surveyed. This should be completed well in advance so as to allow sufficient time for departmental extraction of timber and for clearfelling the standing growth before the area is taken up for planting. The areas to be planted during the next 15 years have been allotted numbers in the Working Plan map to indicate the sequence of fellings to be followed.

348. *Marking for fellings.*—All trees including dead and fallen ones from which saleable logs can be obtained will be marked for felling. All marked trees will be blazed in two places one at breast height and the other at base and numbered serially by chisel at both the places. The girth at breast height is measured and the length of utilisable pole is estimated by eye and recorded in the enumeration register. An abstract of this register arranged in 15 cms. girth classes for each species will then be prepared and the estimated volume of the marked trees arrived at with reference to the volume table given in para 302. These volume tables are based on the local conversion practice in Kanyakumari district and are independent of the utilisable pole length which cannot be accurately estimated by eye. The marking should be checked by the District Forest Officer or his gazetted Assistant spread over the entire area with 10 per cent as minimum. Marking should be completed ordinarily 2 years before the scheduled month of planting so that the departmental extraction of marked trees can be completed in the 1st year and in the 2nd year the left over growth can be clearfelled by purchaser and the preliminary operations be got done.

349. A few scattered large sized trees will be marked for retention over the entire area to provide facilities for hole nesting birds like Hornbills, Bulbul and Woodpeckers and to prevent them from forsaking such areas.

350. *Disposal of tree growth.*—The felling, conversion and dragging to roadside forest depots will be done departmentally, adopting the recent logging methods and tools to minimise waste Transport from forest depot to sale depot at Nagercoil may be done through the agency of contractors.

351. *Extraction Scheme.*—An extraction scheme should be drawn up by the Range Officer for each coupe at the time of marking showing the localities of drag path, cart tracks and depots on a large scale map of 1 cm=40 m. The Scheme should be approved by the District Forest Officer.

352. *Felling.*—Trees should be felled using saw with as little wastage as possible. The work will commence systemsatically from one end of the coupe and progress towards the other end.

353. *Logging and dressing.*—This work must be done with the minimum of wastage and it is necessary to entrust this work to an experienced forester. Frequent check by the District Forest Officer is desirable. The logs which are dragged by elephants should be dragged by using sister hooks and thereby avoiding cutting of drag holes which will cause wastage of timber. In the case of Rosewood the logs will be dressed at site to remove all sapwood along with the bark. In all other cases timber will be transported as round logs with bark on. When the bark is to be left unremoved a ring of 20 cms. wide at the middle of the log will be removed in order to enable measuring of mid-girth. Only defective logs should be rough spared with a view to eliminating the defects as far as possible.

354. *Numbering of logs.*—All logs will be chisel numbered on conversion. The year of felling, coupe number, species, tree number (which must be the same as enumeration number) and log letter (A, B, C.etc.) for the butt, second and third logs respectively will be chiselled on each log.

355. *Classification.*—The present system of classifiying the logs as given in para 98 of Chapter III Part I whill be followed.

356. *Extraction and Transport.*—The converted timber will be dragged by elephants to the Forest Depot. In order to arrange the dragging economically as well as to minimise the possible uphill dragging it is desirable to have more than one forest depot. Forest depots should be situated under shade and the logs should be transported to the sale depot at Nagercoil without any delay to avoid deterioration through exposure and risk by fire and aslo loss by the ft. All forest depots should be specially fire protected by crearing and burning a 10 metre fire line around them and ensuring that this line is kept clear always in fire season.

357. *Clearfelling the standing growth.*—Soon after the extraction of saleable timber omitting trees marked for retention will be sold in auction in the 1st week of April with a voidah from 1st May to end of December. The contractor shall fell and remove all growth including bamboos but materials below 30 cms. in girth at the base end should be left behind in the coups as it will be required for burning. The unplantatble rocky portion within the coups need not be clearfelled. They should be surveyed and demarcated and excluded from planting area. It is essential to watch the progress in clearfelling as any delay or failure in this work will upset the programme of planting.

TABULAR STATEMENT OF FELLING.

Year of felling.	Year of. plant ing	*Kulasekaram Seires.* Coupe number.	*Kulasekaram Seires.* Area in ha.	*Azhagiapan diaputram Series.* Coupe number.	*Azhagiapan diaputram Series.* Area in ha.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1975–76 ..	1976–77 ..	I	40.4	I££	23.9	**Bit I .. 11.2 ha. Bit II .. 12.7 ha.
1976–77 ..	1977–78 ..	II***	39.9	II	49.6	***Bit I .. 23.3 Do. Bit II .. 8.1 Do. Bit III 8.5 Do.
1977–78 ..	1978–79 ..	III ****	46.0	III	30.0	****Bit I .. 23.4 Do. Bit II .. 22.6 Do.
1978–79 ..	1979–80 ..	IV	40.4	IV	30.0	
1979–80 ..	1980–81 ..	V	40.4	V	30.0	
1980–81 ..	1981–82 ..	VI ..	40.4	VI	30.0	
1981–82 ..	1982–83 ..	VII	40.4	VII	40,0	
1982–83 ..	1983–84 ..	VIII	40.4	VIII	29.2	
1983–84 ..	1984–85 ..	IX*	40.6	I	28.4	*Bit I .. 12.6 ha. Bit II .. 28.0 Do.
1984–85 ..	1985–86 ..	X	40.4	X	28.4	
1985–86 ..	1986–87 ..	XI	40.4	XI	28.0	
1986–87 ..	1987–88 ..	XII	40.4	XII	28.4	
1987–88 ..	1988–89 ..	XIII	40.4	XIII	28.0	
1988–89 ..	1989–90 ..	XIV	40.4	XIV	28.0	
1989–90 ..	1990–91 ..	XV ..	40.4	XV	26.2	
			611.3		458.1	

Section : 7—Regulation of Regeneration Operation;.

359. *Burning.*—A fire line 5 m. wide shall be cut all round the regeneration area and this will be scrapped and burnt at the beginning of February shortly before the regeneration area is burnt. The burning operations should be done departmentally after taking adequate precautions to prevent fire from escaping out of the area into the surrounding forests. The slash in the clearfelled area should be burnt in February. Filling and reburning should be completed by middle of March. The entire area should be evently burnt. The left behind useless logs should be placed along the contour to prevent soil wash and cause least interference for other operations. Severe burn should be avoided.

360. *Aligning and staking.*—The espacement will be 3m x 3m the length of stakes should be at least 50 cms. This operation should be completed by the end of March. The stakes should be in thier place even after planting to facilitate replanement of casualties later.

361. *Pitting and planting.*—30 cms3 pits will be dug at each stake and the dug out soil allowed to weather for atleast one month. When the soil has completely weathered the clods are broken and the pits are refilled. Planting of container plants of Albizzia falcata will be commenced at the outset of soulth west monsson after carefully removing the polythene containers. Planting should be completed by the middle of June at the latest. So the pitting operations should be completed a month in advance of plannting.

362. *Kumri.*—There is a great demand for kumri cultivation and high rates are offerred by the kumridars. Allowing kumri helps in augumenting food supply and consideredable revenue is credited to the Department. But all the same the kumari cultivation itself has been the cause of failure or poor performance of many plantations. The kumridars are self centred and are more interestted in their tapioca crop wilfully neglecting the main forest species. Further kumri should not be allowed for more than 2 crops or 1 year whichever in earlier otherwise the damage cause by tapioca crop is immense. Even when kumari is allowed planting should be be done departmentally under direct supervision of the Range Officer. Tapioca planting should not be allowed to presecede forest species planting. Contour planting of tapioca should be enforced.

363. *Nursery : Seed collection and storage.*—Seeds can be collected locally from good straight grown trees of clean bole as in Albizzia falcata there are straight as wll as branching types.

364. *Site.*—The nurvsery site should be located close to the regeneration area to reduce cost of transport and damage to the seedlings while transporting.

365. *Preparation of container plants.*—The present practicce of raising container plants will be continued. The nursery operations should be commenced sufficiently in advance so that all the containers to have a vwell grown seedling of atleast 30 cms. In height at the time of planting out. The plants should be not less than 6 months old.

Section 8—Subsidiary Silvicultural Operatiobns.

366. *Replacement of casualties.*—During the 1st year casualities will be replaced as and when they occur by going over the area frequently during the 1st month itself so that full stocking is achieved. In the 2nd year as soon as the south west monssoon breaks in casualities if any will be replaced by container plants.

367. *Weeding and soil working.*—In the absence of kumri 4 weedings will be done in the 1st year i.e. 1st weeding a fortnight after completion of planting, 2nd in July August, 3rd in September-October and the 4th early in January. The plants will be kept free of weeds and agricultural crops to a radius of 50 cms. After each wedding is completed the Range Officer should report to the Distict Forest Officer and the next weeding should be taken up after receipt of District Forest Officer's orders.

368, In the 2nd year 2 weedings will be sufficient, 1st as soon as the monsoon breaks and the 2nd towards the end of the monsoon before the last showers. A tending operation comprising of cutting back all unwanted growth, climbers and creepers will be done in the month of August.

369. *Thinning.*—Albizzia falcata being a fast growing species needs much of growing space so a silvicultural thinning will be done in the 5th Year when half the number will be removed resulting in an espacement of 4.25 metres. Eventually 400 sound trees of average girth 60 cms. and 20 M. merchantable bole can be expected . During thinning all miscellanous species supressing the main species should be cut back, climber cutting shouldbe done before marking for thinning and cars should be taken while felling for thinning that the trees to be retained are not damaged. Thr thinned produce can be sold profitably for match splints because at least half the number of treee thinned would have attained average girth about 40 cms. Thinning should be done even if noo temunera tive.

370. The felled tree losses its value sharply if allowed to dry unlike other timber trees Thinning and removal should be simultaneous, so the trees to be thinned should be numbered and sold in auction soon after felling.

371. *Programme of thinning.*—The following statement gives the programme of thinning to be followed for the next 15 years.

Thinning schedule of Albizza falcata Plantations.

Serial number.	*Year of thinning.*	*Name of plantations.*	*Year of plantation.*	*Area in ha.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(5)
1	1976–77	Veerapuli	1968	20.84	....
2	1976–77	Balamore	1968	1.00	....
3	1976–77	Veerapuli	1969	12.55	....
4	1976–77	Mugilayadi	1969	10.50	....
5	1976–77	Veerapuli	1970	20.23	....
6	1976–77	Balamore	1970	7.70	....
7	1976–77	Veerapuli	1971	q4.10	..
8	1976–77	Balamore	1971	26.50	....
9	1979–80	Keeriparai	1974	4.50	....
10	1979–80	Velimalai	1974	78.80	....
11	1980–81	Velimalai	1975	67.00	....
12	1980-81	Balamore	1975	36.40	....
13	1980–81	Thudalikad	1975	53.42	**1959 Soft wood R.A. Interplanted with Albizzia falcate during 1975.
14	1981–82	Veerapuli Coupe I	1976	40.40	....
15	1981–82	Balamore Coupe I	1976	23.90	....
16	1982–83	Veerapuli Coupe II	1977	40.90	......
17	1982–83	Balamore Coupe II	1977	49.60	....
18	1983–84	Veerapuli Coupe III	1978	46.00	....
19	1983–84	Balamore Coupe III	1978	30.00	....
20	1984–85	Veerapuli Coupe IV	1974	40.40	....
21	1984–85	Balamore Coupe IV	1974	30.00	....
22	1985–86	Veerapuli Coupe V	1980	40.40	....
23	1985–86	Balamore Coupe V	1980	30.00	....
24	1986–87	Veerapuli Coupe VI	1981	40.40	....
25	1986–87	Balamore Coupe VI	1981	30.30	....
26	1987–88	Veerapuli Coupe VII	1982	40.40	......
27	1987–88	Balamore Coupe VII	1982	40.00	....
28	1988–89	Veerapuli Coupe VIII	1983	40.40	....
29	1988–89	Balamore Coupe VIII	1983	29.20	....
30	1989–90	Veerapuli Coupe IX	1984	40.60	....
31	1989–90	Balamore Coupe IX	1984	28.40	....
32	1990–91	Veerapuli Coupe X	1985	40.40	....
33	1990-91	Balamore Coupe X	1985	28.40	..

சென்னை.6,முதன்மை வனத்துறைத் தலைவர் அவர்களின் 20.12.88ந் தேதிய கடித மு.மு.என்.ஞ3/61900/87-ன் நகல்.

--

பொருள்: வனச்செயல் திட்டம்-கன்னியாகுமரி-வனக்கோட்டம்-1986.87 செயல்திட்ட மாறுபாடு-ஒப்புதல்-ஆணை அளித்தல்.

பார்வை: 1)வனப்பாதுகாவலர்,திருநெல்வேலி மே.கு.என்.9757/87கு, நாள் 25.6.87.

2)மாவட்ட வன அலுவலர்,கன்னியாகுமரி என்.எல்/7933/87, நாள் 15.5.87.

மேற்கான் பார்வையில் கண்டுள்ள கடிதத்தில் கன்னியாகுமரி வனக் கோட்டத்தில் 1986.87ம் ஆண்டில்,திருநெல்வேலி தெற்கு கோட்ட வன செயல்திட்டத்திற்கு மாறாக செய்யப்பட்ட கீழ்க்கண்ட பணி விலகலுக்கு பின் ஏற்பு அளிக்கப்படுகிறது.

வனச்செயல் திட்ட பத்தி.	செயல் திட்டம்.	மாறுபாடுகள்.
371	மென்மர செயல் வட்டம்.	1)1981 ~~வீரப்புலி~~ வீரப்புலி அப்பீசியா கப்பு 6 (குலசேகரம் சரகம்)40.40ஹெக்டர். 2)1981 பாலமோர் அப்பீசியா கப்பு என்.6 (அழகியபாண்டியபுரம் சரகம்)30.30ஹெக்டர். இவ்விரு தோட்டங்களிலும் கலைப்பித்தல் (Thinning)பணி 1986.87-ல் மேற்கொள்ளப்படாமை.

நா.கிருஷ்ணமூர்த்தி,
முதன்மை வனத்துறைத் தலைவருக்காக.

பெறுநர்/- வனப்பாதுகாவலர்,வனச்செயல் திட்ட மண்டலம்,திருச்சி.

நகல்:-1.வனப்பாதுகாவலர்,திருநெல்வேலி மண்டலம்.
2.மாவட்ட வனஅலுவலர்,கன்னியாகுமரி கோட்டம்.
3.ஞ3-முக்கிய ஆணை கோப்பு.
ஆணை

(உண்மைப்படி)

தொலைபேசி என்.40536

மே.கு.என்.வ2/513/89. வனப்பாதுகாவலர் அலுவலகம்,செயல்திட்ட மண்டலம்
என்.60,3ம் பிரதானவீதி,பொன்நகர்,திருச்சி-
620 001,நாள் 17.2.89,மாசி 6,விபவ,
தி.வ.ஆ.2020.

நகல்:-வனச்செயல் திட்ட இருப்புக்கோப்பு.
நகல்:-வனச்செயல் திட்டம்.
நகல்:-லெட்ஜருக்கு(உரிய கடிதங்களுடன்).

எஸ்.நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி.உத்திரவுப்படி)

அ. பத்மநாபன்
22/2/89.

பிம.22/2

முதுநிலை வரைதொழில் அலுவலர் க்காக

372. *Harvesting.*—The final felling will be in the 10th year as the rotation is tentatively fixed as 10 years.

373. The following is given below;—

Serial number.	*Year of felling*	*Name of plantation.*	*Year of plantation.*	*Area in ha.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	1976–77	Veerapuli	1964	17.00	....
2	1977–78	Veerapuli	1967	21.24	....
3	1978–79	Veerapuli	1968	20.84	....
4	1978–79	Balamore	1968	11.00	....
5	1979–80	Veerapuli	1969	12.55	....
6	1979–80	Mugilayadi (Veerapuli)	1969	10.50	....
7	1980–81	Veerapuli	1970	20.23	....
8	1980–81	Balamore	1970	7.70	....
9	1981-82	Veerapuli	1971	14.10	....
10	1981–82	Balamore	1971	26.50	....
11	1984–85	Keeriparai	1974	4.00	....
12	1984–85	Velimalai	1974	78.80	....
13	1985–85	Velimalai	1975	67.00	....
14	1985–86	Balamore	1975	36.40	....
15	1985–86	Thudalikad Unreserved Land**	1975	53.42	1959 Softwood R.A. Interplanted with Albizzia falcata during 1975.
16	1986–87	Veerapuli Coupe I	1976	40.40	....
17	1986-87	Balamore Coupe I	1976	23.90	....
18	1987–88	Veerapuli Coupe II	1977	40.90	....
19	1987–88	Balamore Coupe II	1977	49.60	....
20	1988–89	Veerapuli Coupe III	1978	46.00	....
21	1988–89	Balamore Coupe III	1978	30.00	....
22	1989–90	Veerapuli Coupe IV	1979	40.40	....
23	1989–90	Balamore Coupe IV	1979	30.00	....
24	1990–91	Veerapuli Coupe V	1980	40.40	....
25	1990–91	Balamore Coupe V	1980	30.30	....

சென்னை.6,முதன்மை வனத்துறைத் தலைவர் அவர்களின் 14.12.88ந்
தேதிய கடித ஓ.மு.எண்.ஞ3/103497/85-ன் நகல்.

--

பொருள்: செயல் திட்டம்-மென்மரம் செயல் வட்டம்-1984.85ம்
ஆண்டு மெலித்தல் பணி-செய்யப்படாமை-செயல் விலகல்-
பிரேரணை அங்கீகரித்தல்-தொடர்பாக.

பார்வை:1)மாவட்ட வன அலுவலர்,நாகர்கோவில் எண்.9026/85எல்,
நாள் 21.6.85.

2)வனப்பாதுகாவலர்,திருநெல்வேலி எண்.14419/85.எல்,
நாள் 30.10.85.

3)வனப்பாதுகாவலர்,வனச்செயல் திட்டம்,திருச்சி எண்.டி3/
1473/86,நாள் 10.2.88.

--

கன்னியாகுமரி கோட்டத்தை வனச்செயல் திட்ட பத்தி 373ல் குறிப்பிட்டவாறு, "மென்மரம் செயல் வட்டத்தில்",1984.85ம் ஆண்டு மேற்கொள்ளப்பட வேண்டிய, 'மெலித்தல் பணி' மேற்கொள்ளப்படாமையால், ஏற்பட்ட செயல் விலகல் அங்கீகரிக்கப்படுகிறது.

இருப்பினும், இனி வருங்காலங்களில் மெலிதல் பணி செய்ய முடியாமைக்கு உண்மையான காரணம்(genuine reason)இருப்பின் அதனை முன்கூட்டியே முதன்மை வனத்துறைத் தலைவருக்கு தெரிவித்து ஒப்புதல் பெறவேண்டும்.

நா.கிருஷ்ணமூர்த்தி,
முதன்மை வனத்துறைத்தலைவருக்காக.

பெறுநர்/-
வனப்பாதுகாவலர்,வனச்செயல் திட்டம்,திருச்சி.
நகல்:-
1. வனப்பாதுகாவலர்,திருநெல்வேலி மண்டலம்,
2.மாவட்ட வன அலுவலர்,கன்னியாகுமரி கோட்டம்,நாகர்கோவில்.
3.[illegible] ஞ3 இருப்புக் கோப்பிற்கு.
(உண்மைப்படி)

தொலைபேசி எண்.40536.
ந.எண்.வ2/12504/88.வனப்பாதுகாவலர் அலுவலகம்,செயல்திட்ட
மண்டலம்,எண்.60,3ம் பிரதானவீதி,பொன்னகர்,
திருச்சி.620 001,நாள் 5.1.89,
மார்கழி 21,விபவ,தி.வ.ஆ.2019.

நகல்:-வனச்செயல் திட்ட இருப்புக் கோப்பு.
நகல்:-வனச்செயல் திட்ட புத்தகம்.
நகல்:-லெட்ஜருக்கு உரிய கடிதத்துடன்.

எல்.நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி.உத்திரவுப்படி)

வேணு லக்ஷ்மி [illegible]
பிம.6/1 முதுநிலை வரைதொழில் அலுவலர்.

374. *Replanting.*—The plantations clearfelled will be replanted in the year following felling.

SECTION 9—OTHER REGULATIONS.

375. *Salvaging the existing plantations.*—To improve the present poor condition of the plantations tending operations comprising of clearing unwanted growth and cutting climbers will be carried out according to the table given below:—

Serial number.	*Year of felling.*	*Name of plantation.*	*Year of plantation.*	*Area planted in ha.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1		Veerapuli	1963	49.77	....
2		Veerapuli	1965	26.71	....
3		Balamore	1965	41.27	....
4	1978–79	Veerapuli	1966	42.09	....
5		Ponmanai	1966	11.30	....
6		Ponmanai	1966	18.60	....
7		Veerapuli	1967	41.48	....
8	1978–79	Balamore	1967	22.30	....
9		Veerapuli	1968	29.39	....
10		Balamore	1958	24.70	....
11		Veerapuli	1969	29.95	....
12		Balamore	1969	24.80	....
1	1979–80	Veeapuli	1970	38.55	....
2		Balamore	1970	23.30	....
3		Veerapuli	1971	34.10	....
4		Do.	1972	32.80	....
5		Balamore	1972	30.10	....
6		Do.	1973	27.30	....
1	1980-81	Kaniabandoned area	1958	31.60	....
2		Kaduvavettai	1959	27.82	....
3		Kalikesam	1960	50.00	....
4		Veerapuli	1960	32.78	....
5		Do.	1961	32.78	....
6		Do.	1961	50.18	....
7		Do.	1962	41.68	....

376. Tending operation will not be necessary in pure Albizzia falcata plantations as under growth will be scarce especially after tending in the 2nd year. Thinnig in 5th year combined with tending will suffice to keep the plantation healthy till the harvest in 10th year.

377. But in the case of mixed plantations the District Forest Officer will use his discretion to do a cleaning operation once in 5 years as necessitated by the prevailing conditions of a plantation.

378. *Replanning of failed bits.*—When tending is done such of those areas as have failed and form compact blocks will be surveyed and demarcated and these bits will be replanted in the following year under kumri method.

379. *Closure to grazing.*—The area should be closed to grazing for a period of 5 years. Effective protection against cattle especially goats should be enforced.

380. *Plantation Board.*—Every plantation should carry at the salient corners of its periphery conspicuous boardsshowing the calendar year of its formation and its area. Such of these boards as require replacement will be renewed in the month of April every year.

381. *Inspection paths.*—Permanent and properly graded inspection paths 2 m. wide will be formed in each plantation and kept clean of all growth to facilities inspection.

382. *Fire Protection.*—All plantations will be protected against fire by an exteriorline 5 m. wide which will be cut and burnt every year and by annual clearing of internal boundaries between plantation to a width of 3.5 metres. All burning of fire lines should be completed by the 31s January. Late burning of fire lines may result in serious fires in the plantations. It is therefor important that late burning is never resorted to.

383. *Control.*—A control book, record of works, register of deviations, control of journal, control maps and plantation journals will be maintained for this working circle. The manner in which these records are to be maintained are indicated in Sections under the Chapter on Miscelaneous Regulations.

CHAPTER IV—WORKING PLAN FOR THE FUEL WORKING CIRCLE.

SECTION I—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

884. *Objects of Management.*—The object of this circle is to supply maximum quantity of fuel which these forests are capable of yielding and to some extent to meet the demand for small timber for local use.

385. *General Constitution.*—This Working Circle includes the lower slopes of hills in Mahendragiri and Kalakad Reserved Forests and Singampatti Ex Zamin forests that can be exploited for fuel at a profit. In the previous plan 12 fuel series were prescribed and most of the areas included there have been worked for more than two rotations under coppice system and attempts to reclothe them by artificial regeneration have not been succesful with the result they contain poor growth and could not be sold. Such series numbering eight viz., Vallanad, Arambely, Parivarisurian, Thirukarangudi, Nambikoil, Malayadipudur, Padmaneri and Kolundumamalai are given rest in this plan but selected areas which are free from rocks and boulders wll be regenerated by bringing them under Reafforestation Working Circle.

386. *Area.*—3,951.8 ha.

387. *Character of the vegetation.*—The vegetation is of Southern Tropical Dry Deciduous type. Periodical fires excessive grazing and over exploitation have caused retrogression in the type. The species commonly seen are Teak, Pterocarpus marsupium, Anogeissus latifolia, Albizz species, Acacia species, Zizyphus species, etc. The undergrowth consists of mainly Dodonia viscosa, Cassia auriculata and grass.

SECTION 2—DIVISION OF THE AREA.

388. The Working Circle is divided into 4 felling series.—(1) Kilmanimuthar, (2) Vadagarai (3) Kalakad and (4) Panagudy.

No new areas have been added but in case of Kilmanimuthar series the area marked in the catchment valley of Kilmanimuthar River in the past plan has been excluded in the interests of soil and water conservation. Out of these 4 series, Vadagarai and Kalakad series are situated in the Kalakad Sanctuary ; so these two series will not be worked during this plan period.

SECTION 3—ANALYSIS AND VALUATION OF THE CROP.

389. Except areas included in Panagudy and Kilmanimuthar series which were constituted new in the previous plan the other series contain a series of age gradations having been worked under simple coppice or coppice with standard systems in the past. The lack of homegenity in the growing stock and the varying rate of growth of each species according to the nature of soil and the rainfall and the intensity of exploitation, illicit or otherwise that a particular area has been subjected to, render the task of accurately estimating the average yield per ha. at maturity highly problematical. Again the system of utilisation being through the agency of contractors, factors influencing prices, such as the degree of competition, the prevailing market prices for fuel and timber and the cost of extraction cannot be forecast with any degree of certainity. Owing to these reasons detailed enumeration or valuation surveys were not done.

SECTION 4.—METHOD OF TREATMENT.

390. *Silvicultural system.*—The Silvicultural system will be in general the "Coppice with reserves" system but in coupes or portions of coup es suitable for planting, regeneration from coppice will not be reliee upon and the area will be artificially regnerated adopting the technicuqe prescribed under Rafforisation Working Circle, All growth within the annual coupe whethe saleable or not will be cut excepting the reserved species, viz., Santalum album, Tamarindu ndica, Terminalia chebula, Sapindis imarginatus, Aegele marmelos., Fernonia limonia and any species of softwood ordered to be retained from time to time by the Chief Conservator of Forests

391. *Rotation.*—Thr rotation of any fuel forset should be theoretically fixed at the age o maximum volume production. Since accurate data to calculate the age at which the MAI culminates is not available the rotation has been empirically fixed. The rotation of 40 years prescribed in the previous plan is adopted.

392. *Regulation of the yield.*—The yield is regulated by area' In each felling series therefore the size of the annual coupe is obtained by dividing the total area by the period of rotation.

SECTION 5.—METHOD OF EXECUTING FELLINGS.

393. *The annual coupe and its lay out.*—The annual coupe shall be demarcated on the ground as shown in the felling series map by cut lines 2 meteres wide except where the boundary is already well defined by natural features. The correct area of the coupe will be computed on the basis of actual survey which must be done by an Officer not below the rank of a Forester, but should be countersigned by the Range Officer who will certify to the correctness of the survey after checkingt Any small difference between the actual area of the coupe and the area as shown in the tablular statement of fellings will not involve a deviation requiring sanction so long as the difference does not exceed 10 per cent.

394. While carrying out the survey and demarcation of the fuel coupe, trees on the outer periphery of the forest in the adjoining portions not to be felled should be ring marked and serially numbered at breast height with red paint. A list showing the number, species, girth at breast height (over bark , and location (whether north, south, east or western boundary) will form par of the lease agreement. This will prefent to a great extent any clandestine extension of coupe limits by contractors.

395. "Reserved species" such as Tamarind, Terminalia chebula, Sapindus emarginatus, Feronia limonia, Aegle marmelos, Madhuca indica and Pongamia pinnata occurring in the coupes will be marked and numbered at breast height and a list showing the number of the trees, species and girth will also form part of the lease agreement.

396. *Division into strips.*—Each coupe will be divided into strips. Coupes below 20—ha. in extent will be divided into two strips, while coupes above 20 ha. in extent will be divided into three strips. The strip lines will be cut by lines 1 metere wide,

397. The cut materials obtained while clearing the coupe and strip lines will belong to the contractor who takes the coupe.

398. The sequence in which the strips are to be worked will be left to the discretion of the District Forest Officer.

399. All annual coupe surveys shall be computed by the Range Officer and the field book submitted to the District Forest Officer BY OCTOBER prior to the year of felling. The District Forest Officer and his Assistant between them should check the coupe surveys and enumeration lists of "reserved species" and border trees of at least 3 coupes in each range before the coupes are put up for sale.

400. *Agency of exploitation.*—The coupes will be worked through the agency of Contractors as the system has been established.

401. *Period of lease.*—The coupe will be put up for sale in January or early in February so as to provide time for resale by auction or by tender if the prices obtained at the first sale are not satisfactory. The coupe will be conveyed to the lessee on the 1st April with a voidah of 6 months for coupes below 10 ha. in extent, and 9 monhts for coupes with an extent of 10 to 20 ha. and one year for coupe with an area of more than 20 ha. Irrespective of the date of sale or delay in conveying the coupe to the lessee, no extension of voidah should be ordinarily granted. Range Officers should ensure by frequent inspection that not only the work is carried out as per conditions of sale but also that the progress of work is sufficient to complete the removals by the end of the period of contract.

402. *Coupe arrears.*—In the event of any coupe remaining unsold or portions of coupes remaining unfelled within the lease period in any particular year, such portions will be sold in the subsequent year with such voidah as the District Forest Officer deems necessary, unless he is satisfied that the area is not economically exploitable. In the latter even, the District Forest Officer will record the facts in the control journal and make suitable entries on the control map.

Felling and extraction rules.

403. (i) The coupe should be felled in a systematic manner, strip by strip. A new strip may be entered into only after the Range Officer has personally satisfied himself that the work in the previous one has been satisfactorily completed.

(ii) All "reserved trees" mentioned in paragraph shall not be felled by the Contractor, except such old or unsound trees as have been expressly authorised to be felled by the Distsict Forest Officer, Smaller saplings and seedlings of "reserved species" although may not permit of marking and numbering, shall be also retained by the contractor.

(iii) Excepting for the "reserved species" mentioned above, the Contracter will clearfell all shrubs, trees and climbers even if the species is not required by him, or other wise the proportion of unwanted species like Euphorbia antiquorum, Gyrocarpus jacquini, Givotia rottleriformis Protium caudatum, Commiphora berryi and Morinda oleifera will increase to the detriment of the more specacies valuable. If the contractor fails to comply with this provision, the trees left standing will be clearfelled by the Department and the cost thereof recovered from the Contractor. A condition ot this effect willbe introduced in the sale agreement.

(iv) No tree growth within 20 metres on either side of perennial or semi perennial stream or streams within or along the boundaries of the coupe will be felled. Such streams if any will be clearly marked on the surveyed sketch of each coupe attached to the sale list and announced before the sale. The area of 20 metres on each side thus marked will however not be excluded from the total area of the coupe. The list of such important streams are given below :—

1. Kilmanimuthar River in Kilmanimuthar Series.
2. Kottampali Odai in Kilmanimuthar Series.
3. Pachaiar in Kalakad Series.
4. Vandala Odai in Vadagarai Series.

(v) Everything the Contracor cuts shall be cut clearly with sharp axes or bill hooks as close to the ground as possible in any case within 15 centimetres from the ground level, in such a manner that the bark is not separated from wood. No trimming of the stools is necessary. In areas where kumari regenereation is possible, such as condition need not be insisted and the Contractor allowed to uproot the stumps even, if he so desires. Such areas should be clearly demarcated on the coupe sketch.

(vi) Sawing will be prohibited, except for felling trees or for billeting them into transporatble sizes.

(vii) Bamboos found inside the fuel coupe will be the property of the fuel coupe Contractor : they may be clearfelled by him.

(viii) The Contractor will stack all cut firewood into stacks of such as may be prescribed by the District Forest Officer prior to removal.

(ix) Timber or poles extracted from any copue will be hammer-marked by the Beat Guard at stump site before removal.

(x) The Contractor may construct at any time cart-tracks in any part of the coupe irrespective of the strip he may be working in. He will make only the minimum number of earth slides that are absolutely necessary for the exraction of fire wood from the Upper slopes.

404. *Supply of Agricultural implements.*—The contractor shall at all times during the period of his contract sell to ryots on demand for their *bona fid* domestic and Agricultural purposes all kinds of produce in the coupe at rates to be fixed by the District Forest Officer in consultation with the Collector.

405. The Contractor shall also be bound to supply to the members of the Jaggery Co-operative Societies on demand brushwood such as thorns and twigs of 15 centrimetres and below in girth at such rates as may be fixed by the District Forest Officer in consultation with the Collector.

SECTION 6—TABULAR STATEMENT OF FELLINGS.

406. The following statement shows the coupes to be worked annually during the next 15 years in the two fellings series in the working circle. The annual areas to be clearfelled in each series have been marked on the management maps prepared and appended to this plan.

407. *Tabular Statement of Fellings :*

Year of working.	*Coupe number.*	*Name of series.*		*Remarks.*
		Panagudy.	*Melmanimuthar.*	
(1)	(2)	(3)	(4)	(5)
1976–77	I	15.30	23.60	..
1977–78	II	15.80	22.80	
1978–79	III	14.60	24.10	..
1979–80	IV	14.60	22.80	..
1980–81	V	14.80	23.30	..
1981–82	VI	16.10	23.60	..
1982–83	VII	17.10	23.10	..
1983–84	VIII	16.10	23.60	..
1984–85	IX	15.10	23.80	..
1985–86	X	15.60	21.10	..
1986–87	XI	17.60	22.80	..
1987–88	XII ✓	15.60 ✓	22.80	
1988–89	XIII	15.30	21.80	..
1989–90	XIV	15.60	22.10	..
1990–91	XV	16.80	23.10	..

408. SECTION 7—REGULATION OF REGENERATION OPERATIONS.

The District Forest Officer after inspection of the coupe on its completion will decide the suitability of the area and the extent which could be regenerated artificially. The technique o be adopted is given in detail under Reafforesation Working Circle.

சென்னை.6, முதன்மை வனத்துறைத் தலைவர் அவர்களின் 10.12.88ந் தேதிய கடித ஒ.மு.எண்.கு3/103496/85-ன் நகல்.

--

பொருள்: வனச்செயல் திட்ட வட்டம்-விறகு மர செயல் வட்டம்-1984.85-வனசெயல் குறிப்புகள் மேற்கொள்ளப்படாதது-செயல் விலகல் பிரேரணை-அங்கீகரித்தல்-தொடர்பாக.

பார்வை: 1) மாவட்ட வன அலுவலர் எண்.9025/85.எல், நாள் 21.6.85.

2) வனப்பாதுகாவலர், திருநெல்வேலி மே.கு. எண்.14411/85.எல், நாள் 30.10.85.

3) வனப்பாதுகாவலர், வனசெயல் திட்டம், திருச்சி எண்.டி3/1474/86, நாள் 10.2.86.

--

கன்னியாகுமரி வனக்கோட்ட செயல் திட்டம் பத்தி 407-ன்படி 1984.85ம் வருடம் பனகுடி விறகு கூப்பு-9 வெட்டப்படாமையால் ஏற்பட்ட செயல் விலகல் பிரேரணை அங்கீகரிக்கப்படுகிறது.

நா. திருஞானமூர்த்தி,
முதன்மை வனத்துறைத் தலைவருக்காக.

பெறுநர்/-

வனப்பாதுகாவலர், வனசெயல் திட்டம், திருச்சி.

நகல்:-1) வனப்பாதுகாவலர், திருநெல்வேலி மண்டலம்.

2) மாவட்ட வன அலுவலர், கன்னியாகுமரி கோட்டம்நாகர்கோவில்.

3) கு3-இருப்புக் கோப்பிற்கு.

(உண்மைப்படி)

தொலைபேசி எண்.40536
ந.க.எண்.வ2/12505/88. வனப்பாதுகாவலர் அலுவலகம், செயல்திட்ட மண்டலம், எண்.60, 3ம் பிரதான வீதி, பொன்னகர், திருச்சி.620 001, நாள் 3.1.89, மார்கழி 19, விபவ, திஆ2019

நகல்:-வனச்செயல் திட்டஇருப்புக் கோப்பு.
நகல்:-வனச்செயல் திட்ட புத்தகம்.
நகல்:-மாறுபாடு பிரேரணையின் லெட்ஜருக்கு.

எல். நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி. உத்திரவுப்படி)

வே. லக்ஷ்மி நரசிம்மன்
ம.6/1
முதுநிலை வரைதொழில் அலுவலர்.

சென்னை.6,முதன்மை வனத்துறைத் தலைவர் அவர்களின் 19.12.88ந்தேதிய கடித மூ.மு.எண்.ஞ3/52900/86-ன் நகல்.

--

பொருள்:வனச்செயல் திட்டம்-கன்னியாகுமரி வனக்கோட்டம்-1985.86ல் செயல்திட்ட மாறுபாடு-ஒப்புதல்-ஆணை அளித்தல்.

பார்வை:1-வனப்பாதுகாவலர்,திருநெல்வேலி மே.கு.எண்.11344/86.எல் நாள் 5.6.86.

2-மாவட்ட வனஅலுவலர்,நாகர்கோவில் எண்.7465/86.எல், நாள் 22.5.86.

--

மேற்காண் பார்வையில் கண்டுள்ள கடிதத்தில் கன்னியாகுமரி கோட்டத்தில் 1985.86ம் ஆண்டில்,கன்னியாகுமரி கோட்ட வன செயல் திட்டத்திற்கு மாறாக செய்யப்பட்ட கீழ்க்கண்ட பணிவிலகலுக்கு பின்னேற்பு அளிக்கப்படுகிறது.

வனச்செயல் திட்ட பத்தி.	செயல் திட்டம்.	மாறுபாடுகள்.
407	விறகு செயல் வட்டம்.	பனகுடி விறகு கூப்பு X -ல் 1985.86ல் வெட்டுவதிலிருந்து ஏற்பட்ட மாறுபாடு.

நா.கிருஷ்ணமூர்த்தி,
முதன்மை வனத்துறைத் தலைவருக்காக.

பெறுநர்/-
வனப்பாதுகாவலர்,வனச்செயல் திட்ட மண்டலம்,திருச்சி.
நகல்:- 1)வனப்பாதுகாவலர், திருநெல்வேலி மண்டலம்.
2)மாவட்ட வன அலுவலர்,கன்னியாகுமரி கோட்டம்.
3)ஞ3-முக்கிய ஆணை கோப்பு.
(உண்மைப்படி)

தொலைபேசி எண்.40536
மே.கு.எண்.வ2/515/89. வனப்பாதுகாவலர் அலுவலகம்,செயல்திட்ட மண்டலம்,எண்.60,3ம் பிரதான வீதி,பொன்னகர், திருச்சி.620 001,நாள் 16.2.89,மாசி 5, விபவ,தி.வ.ஆ.2020.

நகல்:-வனச்செயல் திட்ட இருப்பு கோப்பு.
நகல்:-வனச்செயல் திட்டம்.
நகல்:-லெட்ஜருக்கு (உரிய கடிதங்களுடன்)

எல்.நாகராஜராவ்,
வனப்பாதுகாவலருக்காக.

(உண்மைப்படி.உத்திரவுப்படி)

பத்மநாபன்
௨௨/௨/89

பிம.22/2

முதுநிலை வரைதொழில் அலுவலர்க்காக

௨௮/௨/89.

SECTION 8—OTHER REGULATIONS.

409. *Demarcation.*—The coupe will be demarcated with stones at the 4 salient corners, engraved with the number of the coupe and the year of felling as well as the adjacent coupe number and its year of working.

410. *Closure to grazing* .—All felled coupes will be closed to grazing for a period of 5 years lueincluding the year of felling.

411. *Fire protection.*—These area are subjected to periodic fires during the dry season. Any fire that occurs must be immediately extinguished by the local staff. Areas burnt should be closed to grazing by a prompt notification in order to allow the area to recover.

412. *Record of statistics.*—The Contractor will furnish not later than the 10th of each month a statement showing the removals of the previous month of firewood, timber and manure leaf from the coupes supported by the counterfoils of the permits issued for such removals.

413. *Control* .—The following control records will be maintained by the District Forest Officer and posted annually :—

(i) Control Book ; (ii) Record of Works ; (iii) Register of deviations ; (iv) Control Journal ; (v) Control maps ; and (vi) Plantation and nursery journals.

414. The manner in which these records are to be maintained is indicated under the Chapter on Miscellaneous Regulations.

CHAPTER V—WORKING PLAN FOR THE REAFFORESTATION WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

415. *Object of Management.*—The object of the Working Circle is to rehabilitate or in other words do reafforestation of the degraded forests.

(1) Ex-Panchayat forests which have been badly managed and wherein, after take over, attempts made to reclothe by artificial regeneration have not been successful : and

(2) The Reserved Forests which have been much exploited under Fuel Working Circle in the previous plans wherein also regeneration has not succeeded.

416. It is believed now that by adopting different technique and choosing suitable hardly species and enforcing effective protection against men and animals success can be achieved. This is possible if the soil is made receptive by deep ploughing and uprooting and removing all useless growth to eliminate competition and suppression. Protection against cattle for atleast the first 3 years is essential.

417. *General constitution.*—The Working Circle will include such of those areas in the plain forests of Tiruneveli Range and the eastern slopes of the forests in Nanguneri Range which are considered suitable for regeneration.

418. *Area.*—750 hectares out of 2,159.7 hectares considered suitable for reafforestation.

Character of the Vegetation.—The types of forest met with in the Working Circle are :—

419. (1) The Southern Tropical Thorn Forest commonly known as scrub jungle in which thorny species predominate. The terrain is mostly flat ground or low undulating hillocks and the rainfall varies from 50 cms. to 75 cms. and bulk of which is derived from North-East monsoon commencing in October. The species that occur here are Dalbergia multiflora Dichrostachys cineria, Acacia latronum, Acacia planifrons, Albizzia amara, Zizyphus species a a few Azadirachta indica. Dodonia viscosa, Carissa spineria Pterolobium indicum and Euphorbia species form the under growth. The ground has been rendered hard because of heavy grazing and trampling by cattle with the result the rain water runs off without penetration into the soil and the plants are not benefited fully by this rainfall.

(2) Dry deciduous forest which have sufferred due to indiscriminate over exploitation. Here the ground is slopy mostly with outcrop of rock and the species are Chloroxylon swietinia, Albizzia amara, Erythroxylon monogynum, Acacia species, Dalbergia multiflora and stunted growth of teak, Pterocarpus marsupium Anogiessus latifolia etc.The undergrowth is full of

-coarse grass and thorny climbers like Acacia in- tsia, Petrlobium indicum etc. Frequent fires and over grazing are factors to be reckoned. The rainfall is about 80 cms. to 100 cms. mainly from North-East monsoon with a few showers during June-July.

SECTION. 2—DIVISION OF THE AREA.

420. *Dlvision into planting series.*—The area covered by this Working Circle will have three planting series, Viz. Kurumalai series and Vallanad series in Tirunelveli Range and Valliyoor series in Nanguneri Range.

SECTION 3—ANALYSIS AND VALUATION OF THE CROP.

421. *Stock mapping.*—The areas proposed for inclusion in this Working Circle have been carefully stock mapped and only such of those areas suitable for regeneration have been included. Predominently rocky or bouldery sites and steep slopes unsuitable for artificial regeneration have been excluded. Small pathches of rock or bounders within the area included will have to however be omitted by the District Forest Officer during the course of a ctual planting as it was not possible to exclude them in the course of ocular stockmapping.

422. *Valuation of the crop.*—As the areas included in this Working Circle do not contain any exploitable growth no valuation surveyes were condidered necessary.

SECTION 4—METHOD OF TREATMENT.

423. *Silvicutural sustem.*—The silvicultural system adopted will be to artificially restock these degraded areas with suitable species supplementing whatever remnants of the earlier attempts on regeneration are found, by improving the receiptivity of the soil for retention of moisture by working it up with " manvettis " or deep ploughing. Except those trees which are found useful scattered about naturally grown or artificially grown in the earlier attempts the other useless species should be thoroughly clearfelled, uprooted and removed so that soil working is possible and unnecessary compettion and suppression are obviated.

424. *Choice of species.*—The main species will be Acaia planifrons and other species that will be introduced and experimented are Hardwickia binnata, Albizzia lebback, Pterocarpus santalinus etc. Preference is given to Acacia planifrons as it is an indigenous species and comes up even in unhospitable soil and has done well on account of mere protection and grows to exploitable size within a short period of 15 years. The wood is very good for fuel and also as pulpwood.

425. *Rotation.*—The rotation will be 15 years for Acacia planifroms and for other species 30 years. It has been found that the agriculturists in coastal areas are adopting even shorter rotation. It will be safe to tentatively fix the rotation age as 15 years so that almost all the plants reach maturity and attain adequate growth. The necessity to increase or decrease the rotation may be however examined at the time of revision of this working plan.

426. *Annual planting area.*—Because of failure in our earlier attempts a cautious approach has to be made in resorting to clearing felling and uprooting the existing meagre growth over large areas as more harm will be done than good if it is not replaced by better species. So, on an average 50 ha. per year will be planted spread over three localities.

427. After care by protection against cattle and men is very essential. The major contributory cause for the failure of many a successful plantation is neglect after the first year.

428. *Tabular Statement of Planting.*—The following statement gives details of areas to be planted annually in each of the planting series included in the Reafforestation Working Circle. The annual planting areas have been marked on the management Maps appended to this plan.

Year.	*Kurumalai Series.*		*Vallanad Series,*		*Valliyoor Series.*	
	Coupe number.	*Extent in ha.*	*Coupe number.*	*Extent in ha.*	*Coupe number.*	*Extent in ha.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1976–77	I	20	I	20	I	10
1977–78	II	20	II	20	II	10
1978–79	III	20	III	20	III	10
1979–80	IV	20	IV	20	IV	10
1980–81	V	20	V	20	V	10
1981–82	VI	20	VI	20	VI	10
1982–83	VII	20	VII	20	VII	10
1983–84	VIII	20	VIII	20	VIII	10
1984–85	IX	20	IX	20	IX	10
1985–86	X	20	X	20	X	10
1986b87	XI	20	XI	20	XI	10
1987–88	XII	20	XII	20	XII	10
1988–89	XIII	20	XIII	20	XIII	10
1989–90	XIV	20	XIV	20	XVI	10
1990–91	XV	20	XV	20	XV	10

429. The roots of Nityakalyani (Vinca rosea) has a growing demand formedicinal purpose and is being cultivated in private lands in the division. In the annual regeneration area, where the soil has been worked dibbling of seeds of Vinca rosea may be done and the plants looked after. as this will give much needed soil cover and a good financial return.

SECTION. 6—REGULATION OF REGENERATION OPERATIONS.

Survey and demarcation of the Annual Regeneration area.

430. The annual regeneration area will be demarcated on the ground in accordance with the planting series map by cut lines 2 m. wide. The survey and demarcation must be completed one year in advance of planting.

431. *Enumeration of Reserves* :—In the coupe to be regenerated there may be a few trees of usefull species grown naturally or as a result of earlier regeneration operation, these trees within girth of more than 15 cms. or more than 2 m. top height will be enumerated and retained as eserves' as in the case of fuel coupes.

Preparation of the planting site.

432. 1. *Cearfelling and uprootal.*—Leaving the 'reserves' marked for retention the rest of the growth should be claerfelled, uprooted and removed to the periphery for use as brushwood fence. A clean uprooted of all stumps including the old coppice stools should be done. This operation is essential as the existence of this unwanted growth has been the cause for the failure of the regeneration operatoins adopted earlier by competition and suppression Uprootal is necessary to work up the soil by digging or ploughing to make it receptive.

433. 2. *Ploughing.*—The entire are should be ploughed along the contour at least 20 cms deep, with tractor perferably or with country plough. This operation helps in percolation of the limited rainfall which otherwise would go waste as surface run-off. Ploughing can be dispensed with if the District Forest Officer is convinced that it is not possible to carry out this operation because of the bouldary nature of the soil.

434. 3. *Aligning and staking* :—Aligning and staking will be done at an espacement of 3m x 3m.

4· *Water conservation technique* : *Saucer Method* :

435 .Pits 30 cms.^{3} will be dug at each stake and the dug out soil allowed to weather for atleas one month in Arefill-September. When the soil has completely weathered the clods are broken and the pits are thled in order to from the saucer. A saucer 1 metre wide will be made around each pit. After ee saucer is formed around the regenerated spot the centre of the saucer will be made so as to havg a slightly raised platform with the available soil so that it may receiver the seedling. The slantin surface of the saucers should be dressed clean so that all the water received drains down the lowest spot around the 30 cms. ^{3} of soil. The sheeting surface will be dressed with a bund along periphery of the saucer. The bund should be formed only on the sloping side in a half-moon shaped manner so that any water collected above may drain into the saucer.

436. All the preliminary regenaration operations should be completed by the end of Septembe according to the time schedule in order to take maximum advantage of the short monsoon period

437. *Planting* :—North-East monsoon may set in at any time after the 1st week of October and as soon as the rains set in, the container plants should be planted in pits after carefully removing the polythene containers. The planting should be quickly completed by employing the maximum number of mazdoors so that full advantage is taken of the short monsoon. The plants should be 6 to 9 months old and about 50 cms. height at the time of planting.

438. *Kumri* : Kumri can be encouraged if there is demand but care should be bestowed to see that the principal species do not suffer on account of the agricultural crop. Departmental Kumri to raise Vinca rosea may be resorted to with success.

1. *Nursery* : *Seed collection and storage* :

439. Acacia planifrons seeds should be collected locally from sound and well grown trees, if the Deputy Conservator of Forests (Genetics) is not able to supply the required quantity of seeds of different species. Kaliavoor Reserved Forest can supply most of the requirements of the Division. The seeds should be separated from the pericarp, dried and stored in gunny bags. Seed collection can be done during the period May to July.

440. 2. *Nursery Site* : The nursery should be located as far as possible near the planting site taking ensuring unfailing water source. The lead from the nursery site to the planting area should be minimum.

441. 3. *Preparation of container plants* : The present practice of raising container plants will be continued. The nursery operations should be commenced sufficiently in advance so that all the containers do have a well grown seedling of at least 50 cms. height at the time of planting out. To achieve this the nursery operations should be started in January of the year of planting. The container should be of 150 gauge, 25 cms. in height and 10 cms. in diameter. Adding a small quantity of Neem oil cake, well powdered, to the container plant while watering, helps it a long way to grow fast and vigorously.

SECTION—7—SUBSIDIARY SILVICULTURAL OPERATIONS.

442. *Replacement of casualties* :—During the first year casualities will be replaced as and when they occur by going over the area frequently during the 1st month itself so that full stocking is achieved in the 1st year. However casualities if any will be replaced in the 2nd year during the early monsoon period.

443. *Weeding and soil working* : When kumri cultivation is not done 2 weedings combined with soil working are prescribed during the 1st year. The 1st weeding will be done in combination with soil working to a depth of 15 cms. and to a width of 50 cms. around each plant a month after. planting. The second weeding consisting of the same operations will be done and completed towards the end of monsoon but definitely before the last showers. During the 2nd year two weedings combined with soil working will be done first in October along with replacement of casualities soon after the North-East monsoon sets in and the second in December.

SECTION 8—OTHER REGULATIONS.

444. *Plantation Boards* :—The atrea regenerated will be indicated by a small board of uniform also fixed at salient points. Itwill indicate the year of formation and the actual area planted. The Boards will be renewed if necessary in the month of April every year.

445. *Fencing* :—The areas regenerated will be fenced effectively by a thorn fence all round. The cut materials will be of use for this purpose in certain place.

446. *Closure to grazing* : The area should be closed to grazing for a period of 5 years. Effective protection against cattle, including goats, should be enforced by engaging mazdoors.

447. *Avenue planting*: With a view to establish the much needed shade giving avenue on all the roads passing through this poor type of forest and to enhance the aesthetic value suitable tree species like Poinciana regia, Bauhinea racemosa, Butea monosperma, Pithacolotium sub-coriaceum, Pongamea pinnata, Lagerstroemia flosreginae, Cassea fistula will be planted on both sides of the road at least in two rows.

448. *Inspection Paths* : The plantation should have a net work of jeepable tracks to facilitate inspection of even the remote parts. So, the area should be divided into approximately 10 ha. bits and alround 3m. wide paths formed. This should be done at the time of aligning itself, so that pitting is avoided on these tracks. This will help checking of even the preliminary works like uprooting, ploughing and pitting.

449. *Control*.—The following control records will be maintained by the District Forest Officer and posted annually : Control Book, Record of works, Registrar of deviations, Control journal, Control maps, Plantation and nursery journals.

450. The manner in which these records are to be maintained is indicated under the Chapter on Miscellaneous Regulations.

CHAPTER VI— WORKING PLAN FOR THE TERI FOREST REGENERATION WORKING CIRCLE.

SECTION 1— GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

451. *Object of Management.* —The object of the Working Circle is to afforest the sandy wastes and thereby arrest the wind erosion and stablise the shifting sands. Success has been partly achieved because of streneous efforts taken in the past overcoming many constraints.

452. *General Constitution* :—The Working Circle covers the entire Kudiraimozhi Teri Reserved Forest and Sathankulam Reserved Land.

453. *Area* :—1,560.8 ha.

454. *Character of the Vegetation* .—The description of the Character of the vegetation is given in Chapter II of Part I para 58. The nature of vegetation on a particular spot in the Teri depends on the past treatment. A list of plantations raised till 1958 is given in Chapter V of Part I. The list of plantations raised during the period 1959 to 1974 is appended.

SECTION 2—ANALYSIS AND VALUATION OF THE CROP.

455. The object of the Working Circle is only to afforest the barren land and no exploitation is contemplated during the plan period, so valuation of the crop is not done. The revenue from Teri Reserved Forest is obtained from the Palmyrah leases and Minor Forest Produce, mainly usufructs of cashew, and are leased out under Minor Forest Produce Working Circle.

456. *Stockmapping* :—An ocular stockmapping was done and the existing growth was noted and future planting prescribed.

SECTION 3— METHOD OF TREATMENT.

457. The silvicultural system will be artificial regeneration of the open areas with suitable hardy species.

458. Palmyrah is found practically all over the area, seedlings and mature trees in varying densities as a result of attempts made during the last few decades. A small percentage of cashew plants is also seen in patches scattered here and there. Acacia planifrons is also seen all over the area being indigenous.

459. The barren sandy soil with poor nutrients and little capacity to retain moisture, the brief monsoon period with scandy precipitation followed by a long drought and the fierce desiccating winds are the peculiar adverse factors to be borne in mind while prescribing any treatment on afforestation for this Teri forests. So the planting operations should be done strictly according to time schedule, especially planting should be started as soon as monsoon have set in and planting completed within a fortnight to fully utilise the meagre rainfall. So large area in a single locality should not be tackled but regeneartion spots should be diversified in different localities.In each beat about 20 ha. will be planted. Farmyard manure or Neem oil cake application will be necessary since it supplies the much needed soil nutrients. Protection against desiccating wind and scorching sun has to be given for each plant. Much importance should be given in timely operations, close supervision and effective protection.

460. *Choice of species* .— Past performance restricts the choise to 3 main species namely Acacia planifrons, Anacardium occidentale and Borassus fabei lifer.

(1) *Palmyrah* .—Though slow in growth is eminently suitable to the locality being indigenous. If protection against nibbling of shoots by cattle is done, it can withstand drought and grow as tree. Palmyrah is a very valuable species suitable for this tract and is put to multifarious uses.

(2) *Cashew* . —Cashew has withstood adverse condition and has fared well given an initial goodstart and yields appreciable revenue once the tree starts bearing fruits, is one of the ideal trees from the stand point of reclamation as it has huge low spreading crown and is not ordinarily browsed by cattle.

(3) *Acacia planifrons* .—This is an indigenous species and thrives well in this type of soil and is also useful as fuel and pulpwood.

461. *Rotation* .—The aim being to afforest the barren area and to arrest sand dunes no exploitation is contemplated, the question of rotation does not arise. When the whole area is fully covered, the rotation can be decided but usufructs can be harvested when there is yield.

462. *Annual planting area* .—The period of monsoon being very short, planting should be started as soon as the monsoon starts and completed within a fortnight to fully utilise the meagre rainfall. So the planting area cannot be large. However, an extent of 20 ha. in each beat will be planted where the operations will be done simultaneously with the help of the labourers from neighbouring villages.

SECTION 4.

463. Tabular statement of planting in teri working circle.

Year.	*Coupe No.*	*Name of the series.*					*Remarks.*
		Kachinavilai. *Area in ha.*	*Kanam* *Area in ha.*	*Kayamozhi* *Area in ha.*	*Nazareth* *Area in ha.*	*Sathankulam.* *Area in ha.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1976—77	I	19.8	19.6	20.1	23.6	19.6	
1977—78	II	19.8	22.1	20.3	20.3	21.1	
1978—79	III	23.1	21.6	20.8	20.6	22.8	
1979—80	IV	23.6	21.1	20.6	21.1	17.8	
1980—81	V	23.6	19.8	18.1	20.6	19.4	
1981—82	VI	20.1	20.6	19.3	21.8	16.3	
1982—83	VII	20.1	19.3	20.1	19.1	16.6	
1983—84	VIII	20.6	20.6	20.8	22.8	20.6	
1984—85	IX	22.1	20.6	18.8	21.8	21.8	
1985—86	X	20.6	21.1	21.3	24.3	21.1	
1986—87	XI	21.8	25.1	19.6	22.8	21.3	
1987—88	XII	22.1	21.1	21.8	20.6	21.1	
1988—89	XIII	20.1	21.1	20.6	19.1	20.8	
1989—90	XIV	20.8	21.3	18.8	20.6	22.3	
1990—91	XV	22.1	21.3	20.8	19.6	20.6	

464. The planting areas in each beat have been marked on the management map and appended to this plan.

Survey and demarcation of the annual regeneration area :

465. The annual regeneration area will be surveyed (tied to a known point) and demarcated on the ground by concrete slabs in corners, size being (1½ m×½m×0.1 m.) The slab will be erected by burying 1/2m. into the ground. On the exposed portion, the area and year of planting and location as well as adjacent regeneration area will be engraved. Further along the periphery 5 chains apart, pillars size 1m x 0.15m. x 0.15m. will be erected. This type of demarcation is essential as otherwise the planted area cannot be distinguished from the rest of the area in case of partial failure and replanting of the same is likely to take place by mistake as in the past.

466. *Preparation of the planting site* :—The area to be regenerated will be aligned at espacement of 3m x 3m immediately followed by digging 30 cm. cube pits and should be completed by 1st October. Fencing meterials viz palmyrah leaves and thorns will be collected and got ready to protect each plant on the day of planting itself.

467. *Planting* .—As soon as rains start container plants will be planted into pits making sure that the polythene bag is removed completely and planted witnout disturbing the root system. The plants will be protected by erecting guards with palymrah leaves and throns. Acacia planifrons and Anacardium occidentale will be planted in alternate rows. All along the periphery 4 rows will be dibbled with palmyrah pyrenes in a staggered manner. Any insect attack if noticed, prophylactic treatment will be adopted by spraying with suitable insecticide. Just before the closures of monsoon and commencement of hot season mulching will be done around the plants by working the soil and covering it with brushswood of Dodonaea viscosa help retention of miosture near the surface.

SECTION 5.—SUBSIDIARY SILVICULTURAL OPERATIONS.

468. *Watering.*—In extremely dry localities as those including in this working cricle, moisture is the limiting factor in the establishment of a successful plantation. In such localities mere reliance on monsoon precipitation is not always sufficient to ensure the desired esults. Most often the North-Eeast monsoon is irregular, scanty or completely fails altogether. rIt may, therefore ne be necessary to adopt measures alien to conventional forestry such as minimum watering during the dry months so as to enable the plants to establish themselves. Watering each plant with 5 litres of water once in foured days during the dry months will be helpful. Water has to be found by digging wells at the rate of one well for 4 ha. The four hectare bit to be watered from a well should be divided into one hectare bits so that watering can be done in proper sequence every fourth day. This will be rather difficult and costly, however, the increase in cost of planting will be compensated by successful plantation and adequate economic return.Tube wells may be tried with the help of the Ground water Directorate.

469. *Replacement of casualities,*—Replacement of casualties will be done as and when noticed and full stocking will be aimed within a month of planting. Casualities will be replaced in the succeeding year also during the monsoon showers and the various operations prescribed for the first year will be followecd.

470. *Tending.*—The plants willl-be freed from the sand which would have covered during the heavy gale and the brushwood and thorn fence should be set-right before the gales start in the succeeding year.

SECTION 6.—OTHER REGULATIONS.

471. *Closure to grazing.*—The regeneration areas shall be effectively closed to grazing for a period of 5 years including the year of formation. If this is not done, the entire labour and cost is liable to be wasted.

472. *Control.*—A record of work register of the deviations control journal, control maps, planting and nursery journals will be maintained for this working circle, as indicated in the Chapter on Miscellaneous Regulations.

473. *Statement showing the list of Plantations in Kudiraimozhi Teri Reserved Forest and Sathankulam Reserved Land.*

Serial number.	*Name of plantations.*	*Year.*	*Area in ha.*	*Species raised.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	Kanam	1959	10.1	Cashew	Sketch not available.
2	Kachanavilai	1959	10.1	Cashew	Do.
3	Nazareth	1959	40.5	Palmyrah	Do.
4	Nazareth (Avenue)	1959	4.0	Cuttings	Do.
5	Kanam	1959	4.0	Odina Wodier.	Do.
6	Kayamozhi	1959	4.0	Odina Wodier.	Do.
7	Kachanavilai	1959	4.0	Odina Wodier.	Do.
8	Kachanavilai	1960	10.1	Cashew	Do.
9	Kanam	1960	10.1	Cashew	Do.
10	Nazareth	1960	40.5	Palmyrah	Do.
11	Kayamozhi	1960	4.0	Odina Wodier.	Do.
12	Kanam	1960	4.0	Odina Wodier.	Do.
13	Kachanavilai	1960	4.0	Odina Wodier.	Do.
14	Nazareth (Avenue)	1960	4.0	Odina Wodier.	Do.
15	Kanam	1960	20.2	Miscellaneous	Do.
16	Nazareth	1961	40.5	Palmyrah	Do.
17	Kanam	1961	20.2	Miscellaneous	Do.
18	Kachanavilai	1961	10.1	Cashew	Do.
19	Kanam	1961	10.1	Cashew	Do.
20	Kayamozhi	1961	10.1	Cashew	Do.
21	Nazareth	1962	8.0	Palmyrah	Do.
22	Kachanavilai	1962	10.1	Cashew	Do.
23	Kayamozhi	1962	10.1	Cashew	Do.
24	Kanam	1962	10.1	Cashew	Do.
25	Kanam	1962	20.2	Miscellaneous	Do.
26	Kayamozhi	1963	20.2	Cashew	Do.
27	Kachanavilai	1963	20.2	Cashew	Do.
28	Kanam	1963	20.2	Cahsew	Do.
29	Nazareth	1963	40.5	Palmyrah	Do.
30	Nazareth	1963	20.2	Miscellaneous	Do.
31	Kanam (Ex-Plot)	1963	16.2	Rajastan species	Do.
32	Kanam	1963	20.2	Miscellaneous	Do.
33	Kayamozhi	1964	36.4	Cashew	....
34	Kanam	1964	36.4	Cashew	....
35	Kanam	1964	0.2	Odai	....
36	Kachanavilai	1964	6.4	Cahsew	(4 Bits).
37	Nazareth	1964	4.0	Palmyrah	....

Serial number.	Name of plantations.	Year.	Area in ha.	Species raised.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
38	Kanam	1965	24.3	Cashew	....
39	Kanam	1965	20.2	Miscellaneous	Sketches not available.
40	Kayamozhi	1965	31.2	Cashew	....
41	Kachanavilai	1965	28.3	Cashew	....
42	Nazareth	1965	40.0	Palmyrah	....
43	Kanam	1966	20.2	Cashew	....
44	Kayamozhi	1966	20.0	Cashew	....
45	Kachanavilai	1966	20.2	Cashew	....
46	Nazareth	1966	40.0	Palmyrah	....
47	Kanam	1966	20.2	Miscellaneous	....
48	Kayamozhi	1967	20.0	Cashew	....
49	Kanam	1967	20.2	Cashew	....
50	Kachinavilai	1967	20.2	Cashew	....
51	Nazareth	1967	40.5	Palmyrah	(2 Bits).
52	Kanam	1967	20.2	Miscellaneous	....
53	Kachanavilai	1968	20.2	Cashew	....
54	Kayamozhi	1968	20.0	Cashew	....
55	Kanam	1968	20.2	Cashew	....
56	Kanam	1968	20.2	Odai	
57	Nazareth	1968	40.5	Palmyrah	(3 bits marked 20.2 ha.. Remaining bits not available)
58	Kayamozhi	1969	20.0	Cashew	....
59	Kanam	1969	20.0	Cashew	....
60	Kachanavilai	1969	20.0	Cashew	Sketch not available.
61	Nazareth	1969	20.0	Palmyrah	(3 Bits).
62	Kanam	1969	20.0	Odai	....
63	Kayamozhi	1970	20.0	Cashew	....
64	Kanam	1970	20.0	Cashew	Sketch not available.
65	Kachanavilai	1970	20.0	Cashew	(2 Bits.).
66	Sathankulam	1970	14.0	Cashew	....
67	Sathankulam	1970	6.0	Odai	....
68	Nazareth	1970	58.1	Palmyrah	(5 Bits.)
69	Kaam	1970	20.0	Odai	(2 Bits).
70	Kanam	1971	40.0	Cashew	....
71	Kayamozhi	1971	40.0	Cahsew	Part of skecth not available.
72	Sathankulam	1971	20.0	Cahsew	....
73	Kanam	1971	40.0	Odai	....
74	Nazareth	1971	40.0	Odai	....
75	Sathankulam	1971	20.0	Odai	....
76	Kachanavilai	1971	40.0	Palmyrah	....

(1)	(2)	(3)	(4)	(5)	(6)
77	Kanam	1971	3.5	Acacia auriculiformis.	Sketch not available.
78	Kanam	1972	40.0	Cashew	....
79	Kayamozhi	1972	40.0	Cashew	....
80	Sathankulam	1972	20.0	Cashew	....
81	Kanam	1972	40.0	Odai	....
82	Nazareth	1972	40.0	Odai	....
83	Kochanavilai	1972	20.0	Odai	....
84	Kachanavilai	1972	20.0	Palmyrah	....
85	Kachanavilai-Poochikadu Road	1972	2.1	Casuarina	Sketch not available.
86	Kayamozhi	1973	40.0	Cashew	....
87	Kachanavilai	1973	40.0	Cahsew	....
88	Sathankulam	1973	20.0	Cahsew	....
89	Kanam	1973	20.0	Odai	....
90	Nazareth	1973	20.0	Odai	....
91	Kayamozhi	1973	20.0	Odai	....
92	Kachanavilai	1973	39.0	Palmyrah	....
93	Kachanavilai-Poochikadu Road	1973	3.5	Casuarina and Acacia auriculiformis.	Sketch not available.
94	Kanam	1974	30.0	Odai	....
95	Kanam	1974	41.0	Cashew	....
96	Kachinavilai	1974	40.0	Cahsew	....
97	Kachinavilai	1974	40.0	Palmyrah	....
98	Nazareth	1974	30.0	Odai	....
99	Sathankulam	1974	20.0	Cahsew	....
100	Sathankulam	1974	10.0	Palmyrah	....
			2,268.2		

CHAPTER VII—WORKING PLAN FOR THE BAMBOO WORKING CIRCLE.

SECTION I—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

474. *Object of the Management.*—The main object of this working circle is to ensure the production of maximum qnantity of bamboos for both industrial and domestic requirements.

475. *General Constitiution.*—The Banboo Working Circle comprises of all Bamboo bearing areas in the division "confined to Kanyakumari district. Bamboo occurs in Kilamalai, Veerapuli, Velimalai and Asambu forests. But the area under bamboo has been considerably reduced by conversation into teak, softwood and rubber plantations. Uncontrolled over exploitation and flowering have contributed to the sparce stocking at present. Its occurance in Nanguneri Range it so sparce that it is not sufficient for exploitation and if leased out even the limited stock is likely to be destroyed.

476. *Character of the vegetation.*—Bambusa arundinacea is the predominent specices and occurs in the moist deciduous type of forests.

SECTION 2—DIVISION OF THE AREA.

477. The working circle will have only one felling series having 3 coupes.

Coupe I—Whole of Alagiapandiapuram Range.

Coupe II. —

North.—The boundry starts from north west corner of Kilamalai R.F. and runs along the northern boundary of the said R.F. till it meets Kodayar River.

East.—Thence the boundry runs south wards along the Kodayar River till it meets the bijunction point of Kilamalai and Veerapuli R.F.

Coupe II—

South and West.—Thence the boundry runs along the south and west of Kilamali R.F. till it reaches the starting point.

Coupe III—

North.—The boundry starts from the point were the Kodayar River cuts the northern boundary of Kalamalai R.F.and thence runs along the said R.F.and along the northern boundary of Veerapuli R.F. till it meets the boundary of Azhagiapandipuram Range.

East.—Thence the boundary runs along the western boundary of Azhagiapandipuram Range till it cuts the southern boundary of Veerapuli R.F.

South and West.—Thence the boundary runs along the Veerapuli R.F. and along the common boundary of Veerapuli and Kilamalai R.F. and finally along the Kodayar River till it meets the starting point.

SECTION 3—METHOD OF TREATMENT.

478. *Silvicultural System.*—Silvicultural system adopted for working the bomboos in this woroking circle may be called as 'Culm Selection System'. Suitable area will be artifically regenerated with Bambusa arundinacea.

479. *Felling Cycle.*—A felling cycle of 3 years is prescribed as is generally adopted for working bamboos in the state.

480. *Regulation of the yield.*—The yield will be regulated by area. The only series in this this working circle is divided into 3 coupes. The boundaries are natural features and are indicated on the management maps. A destcription of the boundaries of the coupes and the sequence of annual felling are given in paragraph 477 and 485.

Section 4—Method of Executing Fellings.

481. *Agency of exploitation.*—The fellings willbe made through the agency of contractors by selling the coupes prescribed for the year in open auction as at present. There is however a strong case for working bamboos departmentally, as bamboo felling rules are seldom by contractors and no amount of fines imposed have been able to deter them. The suggestion requires to be given a fair trial in order to save the bamboo forests from progressive deterioration and ultimate extinction due to faulty working by contractors.

482. *Period of Lease.*—The lease period will be eight months for each coupe commencing from 1st of September and ending with 30th April next. Each annual coupe will form a separate lease unit.

483. *Felling Rules.*—The following felling rules are prescribed :—

(*i*) A minimum of 6 green mature culms should be left in each clump ; a culm will be considered mature if it is at least one year old.

(*ii*) No culm which is less then a year old shall be felled.

(*iii*) No culm shall be removed with the rhizome.

(*iv*) Culms shall be cut clean and as low as possible, but not below the first internode from ground level.

(*v*) Felling shall be made on the side of the clump opposite to that from which the largest number of new culms spring up.

(*vi*) Bamboos in a fuel coupe under working will be the property of the fuel coupe contractor and not of the bamboo coupe contractor.

(*vii*) Bamboos occurring in the Softwood conversion coupes of the year will belong to the top end contractor.

484. *Supply of the local demand.* —The bamboo coupe contractor shall at all times during the period of his contract sell to ryots on demand for their bonafide and domestic agricultural purposes, bamboos at such rates as may be fixed by the District Forest Officer in consultation with the Collector from time to time.

485. Section 5—Tabular statement of Fellings.

Year of Felling. (1)	*Coupe number.* (2)
1978-79	I
1979-80	II
1980-81	III
1981-82	I
1982-83	II
1983-84	III
1984-85	I
1985-86	II
1986-87	III
1987-88	I
1988-89	II
1989-90	III
1990-91	I

486. There will be no sale of bamboo coupes till 1978 because of over felling done during the year 1972 to 1974.

487. If a coupe is not sold in one year it need not be sold in the next year.

Section 6—Regulation of Regeneration Operations.

488. Area suitable for regeneration above the Forest Reserved Land around Pechiparai lake is marked in the map and each year plantingof rhizoms in 45 cm. cubic pits will be done in rows. at 5m× 5m espacement. Yearly 10,000 plants will be planted contiguosly commencing from 1976t Subsidiary silvicultural operations will be carried out as deemed necessary by the District Forest Officer.

Section 7—Other regulations.

489. *Grazing.*—The forest included in this working circle will be opened to grazing at all times except plantations which will be closed grazing for 5 years.

490. *Fire Protection.*—The Working Circle will be protected from fire under the prescription for general fire protection as detailed in the Chapter on Miscellaneous Regulations.

Section 8—Control.

491. *Control.*—A control book, control journal, record of works and register of deviations will be maintained for the working circle. The manner in which these forms are to be maintained is indicated in the Chapter on Miscellaneous Regulations.

492. Special mention should be made in the control journal when any sporadic or general flowering or bamboo is noticed in any particular locality or localities in the region.

CHAPTER VIII—GRAZING WORKING CIRCLE

Section 1—General constitution of the Working Circle.

493. *Object of Management.*—The object is to provide adequate pasture for the cattle in the villages adjoining the forests. All attempts to limit the grazing incidence and improve the grazing facilities have been futile and will continue to be so, unless the public opinion changes on the maintenance of the useless decrepit cattle or the government comes down heavily by heavy increase in the grazing fees and severe action on illicit grazing.

494. *General Constitutions.*—The Working Circle will include all the forest areas throughout the Division with the exception of such of those areas closed to grazing for silvicultural reasons or in the interest of Wildlife Preservation as a sequence to incendiarism.

495. *Closure to Grazing.*—The following areas will be closed for grazing.

1. for silvicultural reasons —
    - (*a*) All plantations for a period of 5 years from the year of formation.
    - (*b*) All fuel coupes for a period of 5 years from the year of felling.
    - (*c*) The Kalakad Sanctuary.

2. *On account of incendiarism,*—Areas subject to incendiarism may be closed to grazing subject to the condition that the aggregate of the areas so closed at a time does not exceed 500 ha. and provided that the District Forest Officer submits a report to that effect to the Collector and the Chief Conservator of Forests through the Conservator of Forests. This course will be adopeted when the District Forest Officer consideres that the burnt area is so extensive and damage to the forest so severe as to warrant closure to grazing.

496. *Grazing Notification.*—Every year, not later than in May, a notification regarding grazing specifying the areas closed to grazing and the conditions regulating the grazing will be published.

Section 2—Method of Treatment.

497. *Grazing Unit.*—The whole division forms one grazing unit, accorfdingly a grazing permit is valid for the whole division.

498. *Regulation of grazing.*—All animals except goats may be licenced to graze inside the forest. Grazing will be opened to cattle covered by grazing permits. Cattle taken along recognised paths and roads through estates and patta lands inside the forest will not be regarded as tresspass. No distinction shall be made as local and foreign cattle in any part of the division for any purpose. Illicit grazing should be put down by constant vigilance and arranging special parties especially goat browsing as there seems to be some slackness in this matter.

499. The following grazing fees prescribed by Government for the whole State shall be collected in this division also:—

	RS.	PS.
Sheep	0	50
Cows, Bulls, Horses and Donkeys	1	00
Buffaloes	2	00
Elephants	10	00

500. A grazing permit will be valid throughout the division except closed areas and sanctuary upto the end of the grazing year. The grazing year commences from 1st July and ends on 30th June. Every efforts should be made to make the permits available near the villages instead of making the villagers come all the way to the Range headquarters.

501. *Penning.*—All the grazing is now confined chiefly to the easily accessible slopes of the fuel forests that are close to villages. But in periods of drought penning had been permitted in the higher slopes. In the interest of Wildlife and to develop and preserve Kalakad Sanctuary, no penning shall be allowed in future except in Kanniyakumari district.

502. Permits for penning will be issued by the Range Officer with the previous approval of the District Forest Officer who will locate the sites of pen in Kanniyakumari district.

503. *Fodder Grass.*—Free cutting removal of fodder grass will be allowed from all areas except those closed to grazing. This free removal of grass will be governed by the following conditions :—

1. Removal of grass may be allowed free only in headloads and bonafide domestic use and not for sale.

2. Removal may be made all through the year but not before dawn or after dusk.

3. No permits will be required for grass removed in headloads.

4. Removal should be made only through recognised paths and roads.

5. No forest produce shall be cut to stiffen or tie the grass bundles.

6. Any grass removed should be presented for inspection on demand by any of the forest staff.

7. The free removal of grass in any particular locality is liable to be terminated for serious breach of any of the above conditions or the provisions of the Forest Act.

504. *Concessions.*—The kanis will be given free grazing permits for their own cattle. They can graze their cattle anywhere except in the areas specifically closed to grazing. None other than these kanis will be allowed free grazing.

505. *Control Records.*—The relevant control records will be posted at the end of each year.

CHAPTER IX—WORKING PLAN FOR THE MINOR FOREST PRODUCE WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

506. The Minor Forest Produce Working Circle will cover all the forests under the control of the Forest Department in the Tirunelveli South Division excluding the area leased out to **Bombay Burma Trading Corporation.**

SECTION 2—ANALYSIS AND VALUATION OF THE CROP.

507. The important items of Minor Forest Produce occurring in the Division are :—

English or Tamil name. (1)	Botanical name of species. (2)	Portions used. (3)
Athikai	Ficus species	Fruits.
Avaram Bark	Cassia auriculata	Bark.
Bees Wax	....	....
Black dammer of Karunkungiliam	Canarium strictum	Gum.
Cardamom	Elettaria cardamomum	Fruits.
Clearing Nut or Thethankottai	Strychnos potatorum	Seeds.
Curry leaves	Murraya koenigii	Leaves.
Cut stone	....	....
Deer horns	....	....
Eacham grass	Phoenix acaulis	Leaves.
Eiya kundu	Bouwolfia serpentina	Roots.
Elandai	Zizyphus mauritiana	Fruits.
Fodder grass	Several species	Entire plant.
Gallnut	Terminalia chebula	Fruits.
Gravel	....	..
Ginger	Zingiber officinalis	Stem tuber.
Gum kino	Pterocarpus marsupium	Gum.
Honey	....	....
Illuppai	Bassia latifolia	....
Indukodi	Acacia intsia	Bark.
Undunar	Acacia intsia	Fibre.
Ivory	....	....
Kalli	Euphorbia antiquorum	Stem.
Kattu-mandarai	Bauhinia vahlii	Leaves.
Kana-kamugu	Pinanga dicksoni	Fruits and leaves.
Kattu elimichai	Atlantia monophylla	Fruits.
Kattu elimichai	Limonia acidissima	Fruits.
Kanjirankottai	Strychnos nux-vomica	Fruits.
Kattu jathikai	Knema attenuata	Fruits.
Kilakkai	Carrisa carandas	Fruits.
Konnai Bark	Cassia fistula	Bark.
Koondappanai	Caryota urens	Flowers.
Kundumani	Abrus precatorius	Seeds.
Koovai	Curcuma angustifolia	Leaves.
Korai grass	Cyperus rotundus	Stem.
Lavangam	Cinnamomum Zeylanicum	Bark.
Lemon grass	Cymbopogen species	Leaves and Stem.
Manali kilangu	Gymnema montanum	Root tuber.
Marul	Sansevieria Zeylanica	Fibre.

(1)	(2)	(3)
Mohwa	Madhuca indica	Flowers and seeds.
Nannariver	Hemidesmus indicus	Roots.
Neem Seeds	Azadirachta indica	Seeds.
Nellikai	Emblica officinalis	Fruits.
Nux-Vomica	Strychnos nux-vomica	Seeds.
Odankodi	Hippocratea indica	Stem.
Peypodal	Trichosanthes cucumerina	Fruits.
Plantain leaves	Musa species	Leaves.
Pungam seeds	Pongamia pinnata	Seeds.
Punnamkottai	Calophylluminophyllum	Seeds.
Rattan		....
Sambhur horns		....
Soap nut	Sapindus emarginatus	Fruits.
Shekoy	Acacia concinna	Fruits.
Stone		....
Sundaikai	Solanum pubescens or trilobatum	Fruits.
Tamarind	Tamarindus indica	Fruits.
Thulukai	Entada phaseoloides	Seeds.
Teeanika or Beleric Myrobolam	Terminalia bellerica	Fruits.
Turmeric	Curcuma longa	Stem tuber.
Valampuri	Helicteres isora	Bark.
Vallikilangu	Ipomica digitata	Tuber.
Vembadam	Ventilago madras patana	Bark.
White dammer or Vellakungilium	Vateria indica	Gum.
Wild brinjal	Solanum nigrans Solanum pubescens	Furits.
Wild jack	Artocarpus heterophyllus	Fruits.
Wild Mangoes	Mangifera indica	Fruits.
Wild pepper	Piper longum	Fruits.
Wood apple	Feronia limonia	Fruit.

SECTION 3—DIVISION OF THE AREA.

508. The lease units are recast as follows taking into consideration the availability of the produce, viability of the unit, demand and administrative convenience.

	Lease Unit. (1)			Locality. (2)
Tirunelveli Range :				
1	All Minor Forest Proceduce except usufructs of cashew in Kudiraimozhi Teri, Sathankulam Teri, and Chalikulam and Palmyrah in Kudiraimozhi and Sathankulam Teris.			All reserves and ex-zamin forests in Tirunelveli Range except Kaliavoor Reserved Forests.
2	Usufructs of Palmyrah or Tamarind			Kaliavoor Reserved Forests.
3	Usufructs of Cashew in Chalikulam and Kudiraimozhi and Sathankulam Teris (to be sold if departmental collection is not contemplated).			Chalikulam Kudiraimozhi and Sathankulam Teris
4	Usuforucts of Palmyrah in Unit I	Nazareth beat	Kudiraimozhi Teri	
5	Do.	II	Do.	Do.
6	Do.	III	Do.	Do.
7	Do.	IV	Do.	Do.
8	Do.	V	Kayamazhi	Do.
9	Do.	VI	Do.	Do.
10	Do.	VII	Kanam	Do.
11	Do.	VIII	Do.	Do.
12	Do.	IX	Do.	Do.
13	Do.	X	Do.	Do.
14	Do.	XI	Kachinavilai	Do.
15	Do.	XII	Kachinavilai	Do.
16	Do.		Sathakulam Teri	Do.
17	Stone Quarry			Eastern slopes of Kurumalai Ex-Zamin Forests about 4 ha.
Nanguneri Range :				
18	All Minor Forest Produce excluding	Farm I	Thercuveeravanallur and Kolundumamalai Beats.	
19	Do.	II	Padmaneri and Vadagarai Beats	
20	Do.	III	Kalakad and Sengaltheri Beats.	
21	Do.	IV	Nambikoil and Malayadipudur beats	
22	Do.	V	Thirukarangudi, Parivarisurian and Valliyoor beats.	
23	All Minor Forest Produce Farm excluding Reeds, Rattan and Manure leaves.	VI	Singampati Ex-Zamin Forests excluding Bombay—Burmah Trading Corporation area.	
24	Rattan	Farm I	Do.	
25	Rattan	Farm II	Nanguneri Range excluding Singampatti Ex-Zamin forests.	
Bootapandi Range :				
26	All Minor Forest Produce excluding reeds, rattan and manure leaves.			Whole of Boothapandi Range.
27	Rattan	Farm III		Do.
Alagiapandiapuram Range				
28	Monri Forest Produce excluding Reed Rattan and manure, laeves.			Whole of Alagiapandiapuram Range.

29 Rattan	Farm IV	Whole of Alagiapandiapuram
29 A. Tea leaves		S. No. 3060 Ponmanai
Kulasekaram Range :		
30 All Minor Forest Produce excluding Reeds, rattan and manure Leaves		Whole of Kulasekaram Range.
31 Rattan	Farm V	Do.

1. Palmyrah usufructs units to be sold once in 4 years—the lease period being the 4 years.
2. Rattan farms—Due farm to be sold each year in sequence in a cycle.
3. Stone quarry to be sold once in 2 years lease period being 2 years.
4. Tea leaves to be sold in auction with lease period, 1st April to 31st March and this unit will be sold till the area is converted into soft wood plantations.

SECTION 4—METHOD OF TREATMENT.

509. *Agency of exploitation.*—The right to collect Minor Forest Produce will be sold in auction each year—the lease period will be 1st July to 30th June.

510. Ivory, deer horne and remains of dead animals will be collected, departmentally in the interest of preservation of wildlife.

511. Departmental collection of any of the Minor Forest Produce may be resorted to, if considered necessary after obtaining specific permission of the Conservator of Forests.

512. Manure leaves will be sold on demand by sale of permits at seigniorage rates.

513. In case of demand for stone and gravel in any particular reserved Forest quarries may be opened by the District Forest Officer in such places where there is no growth so that no detriment is caused to the forests. The area of the quarry site should be demarcated on the ground and specified on the permit issued by the District Forest Officer in order to prevent quarrying all over the place.

514. Reeds have been leased to Sun Paper Mills (Limited) Cheranmahadevi for a period of 12 years from 1st April 1970.

515. The rights of Kanis as admitted by the rules formed under the erstwhile Travancore—Cochin State Government (vide appendix) will be respected in Kanyakumari district.

SECTION 5—REGULATION OF REGENERATION OPERATIONS.

516. 'Cloves' plantations have been raised in Alagiapandiapuram Range at Upper Pambar starting from 1971. The list of plantations is given below :—

Year of planting.	*Extent.* *hectare.*
1971	2.4
1972	2.3
1973	2.4
1975	2.5

517. Considering the economic importance of cloves, a special division has been formed on 21st August 1975 as per G.O. Ms. No. 700, Forests and Fisheries Department dated 24th July 1975. The Divisional Forest Officer will raise plantations in future and also look after the maintenance of the existing plantations. This Working Plan do not apply to the areas covered by the Cloves Division.

SECTION 6—CONTROL.

518. A control book, control journal, records of works register of deviations and plantations and nursery journals will be maintained for this Working Circle.

CHAPTER X—PROTECTION WORKING CIRCLE.

519. *Object of Management.*—Whereas the objects of Management for the various other Working Circles are for getting certain direct benefits the object of this Working Circle is to continue to get the more important indirect benefits. Most of our valuable forests have been degraded in the course of the last few decades, of course with all good intentions of obtaining quick returns. The remaining forests mostly lie on higher reaches and they are the sources of important the rivers like Kodayar, Parliar, Manimuthar, etc. on which depends the agriculture and prosperity to the agriculturists of ths two districts. These forests should be protected necessarily in the interests of soil conservation water supply and moderation of weather.

520. Of late there has been a welcome realisation that the destruction of forests and along with it the wild life is detriment that at least some parts of the forests have to be preserved as natural reserve, so these forests which are brought under this working circle should be protected zealously by guarding against dictates of shortsighted policies which destroy in no time but can never be replaced.

521. *General Constitution.*—The Protection Working Circle comprises of all the areas in the division not included in any of the working circles other than the Minor Fotrest Produce and grazing working circles. The area leased to Bombay Burmah Trading Corporation in Singampatti forests is also outside this working circle unfortunately. Most of the forest allotted to this working circle cannot be worked systematically and economically and on account of their inaccessibility and that is why perhaps they are still there. Some other areas brought under this working circle are in badly denuded condition because of biotic influence in the past.

522. *Method of Treatment.*—In view of what has been stated above the whole working circle will be given rest from exploitation of timber fuel or bamboos and collection of Minor Forest Produce will be permitted under the rules in force from time to time. Grazing and cultivation of cardamom should not be encouraged.

CHAPTER XI—MISCELLANEOUS REGULATIONS.

523. The following items are dealt with in this chapter.

1. Rubber Circle.
2. Farm Forestry.
3. River Fringe and Canal Bank Plantations.
4. Sea Coast Plantations.
5. Introduction of Pine in Upper Kodayar.
6. Kandamparai Teak plantations.
7. Kani Settlements.
8. Kaliavoor Reserved Forest.
9. Sandalwood.
10. Nature Reserve.
11. Cardamom leases
12. Chip Board.
13. Eta reeds.
14. Checkpost
15. Fire Protection.
16. Boundaries
17. Buildings and wells
18. Roads
19. Rainguages.
20. Wildlife
21. Livestock.
22. Abandoned Estate.
23. Electricity Board.
24. Reservation of Ex-Zamin Forest and other Unreserves.
25. Control.

RUBBER CIRCLE

524. A large extent of forest in Kanyakumari District of about 5000 ha. lying in Kalmalai and veerapuli forests wherein Rubber Plantations are raised and future areas are earmarued comes under Rubber Circle. The management of this area will be with Conservator of korests, Rubber Circle for protection and exploitation and is excluded from the prescriptions of this plan. The District Forest Officer, his staff and persons authorised by him will have unrestricted right to enter upon this area in performance of their duties. The entire rubber plantation is protected by annual fire tracing of the periphery. The protection staff of the division should be watchful to see that no fire enters the division result of fire tracing by the Rubber Plantation staff.

525. *Clove Plantation Division.*—The existing cloves plantations and the future plantation of this species will be excluded from the operation of this working plan, as there is separate Divisional Forest Officer for this purpose.

FARM FORESTRY PLANTATIONS.

526. *Object of Management.*—The object of raising Farm Forestry Plantations is to supply to the villagers to the extent possible, their requirement of fuel wood, small timber, green manure etc., and incidentally provide employment for the labour and to bring large area though scattered under tree cover.

527. *General constitutions.*—The Working Circle will include all the Farm Forestry Plantations raised to date and areas considered suitable for raising such plantations in porambokes.

528. *Division of the area.*—There will be only one felling series but fellings may take place in different localities when the plantations reach rotation age.

529. *Analysis and valuation of the crop.*—Farm Forestry plantation have been raised since 1963. This is a laudable scheme which is undertaken for the benefit of the villagers. Even then the progress has been haphazard sometimes for want of funds or due to opposition of the Panchayats to make available their poramboke lands for this purpose. In certain cases where plantations are raised after persuasion, the plants are allowed to be damaged by cattle and men due to the apathy of the villages themselves. The enforcement of protection can be made meaningful if these lands be notified under Section 26 of the Madras Forest Act.Certain enlightened Panchayats Co-operate to bring about successful plantations. The recent G.O. Ms. No. 117, Agri culture, dated 12th January 1971 giving 50 per cent of the revenue from these plantations to the Panchayat concerned sould act as incentive so it is hoped that this scheme can be pushed through more efficiently.

530. The plantations have been stock maped and future areas selected after inspection taking as guidance the report of the Reconnaissance Division. The present condition of plantations is given in the statement appended—*vide* Paragraph 536.

METHOD OF TREATMENT.

531. *Silvicultural System.*—The silvicultural system will be clerfelling followed by artificial regenceration.

532. *Rotation.*—The rotation is tentatively fixed as 10 years for Acacia arabica raised in tank beds and 30 years for the miscellaneous species raised in other poramboke lands.

533. *Exploitation.*—Some of the plantations in tank beds will come for exploitation during the plan period. These will be inspected by the District Forest Officer and felled in such a way to allow coppice growth without uprooting. The period of lease should be just adequate for cutting the area and the season should be such as to avoid waterlogging of coppice stools,in order to encourage coppice shoots. If the crop is not mature. felling can be deferred to a laterstage with the approval of the Conservator of Forests. Statement of fellings is appended--*Vide* Paragraph 537.

534. *Replanting.*—The Plantations clearfelled can be replanted in the following year. Coppice growth and natural regeneration in the clearfelled plantations should be fostered and Planting containers plants should be judiciously done in the blank areas.

535. *Fresh areas.*—The areas given in Para 538 are available for planting in future but their availability for actual planting depends on the consent of the Panchayats at the time of taking over for planting which can not be pre-judged.

536. *Technique of Regeneration.*—In tank beds Acacia Arabica will be the main species. Tank beds with Kallar soil should be avoided. The extent to be planted in a tank will be with reference to area likely to be submerged and period of storage. Judicious manipaultion is necessary in planting the seedling, certain percentage can be planted on the foreshores with the onset of North-East monsoon and the balance as the water receds. In waste lands depending on the soil condition misecellaneous species like Acacia planifrons, Anarcardium occidentale etc. can be planted. The method of regeneration will be as is now in practice in tank beds and in the case of other poramboke lands the method suggested under Reafforestation Working Circle will be adopea.

237. *List of Farm Forestry Plantations in Tirunelveli South Division.*

Name of Panchayat Union.	*Serial number.*	*Year and Locality.*	*Name of species.*	*Area in ha.*	*Present condition given in percen age of the whole area.*				*Remarks.*
					Good.	*Averege.*	*Poor.*	*Blank.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Manur	1	1968 Gangaikondan	Karuvel	80.9	..	80	10	10	....
Manur	2	1969 Manur	Karuvel	121.4	..	75	15	10	....
Manur	3	1970 Manur	Karuvel	10.0	..	60	30	10	....
Manur	4	1972 Abishekapatti	Karuvel	70.0	..	45	25	30	....
Manur	5	1973 Abishekapatti	Karuvel and Odai	40.0	..	75	25	..	....
Manur	6	1974 Abishekapatti	Karuvel	46.1	..	..	..	..	....
			Total	368.4					
Palayamkottai	1	1963 Chettikulam	Karuvel, Neem, Vagai etc.	13.9	..	90	10	..	....
Palayamkottai	2	1963 Parpakulam	Karuvel, Neem, Vagai etc.	20.2	..	75	..	25	....
Palayamkottai	3	1967 Konganthanparai	Karuvl and Cashew	40.5	..	..	40	60	....
Palayamkottai	4	1968 Muthur	Karuvel and Cashew	40.5	..	55	20	25	....
Palayamkottai	5	1968 Sivalaperi	Karuvel	80.9	..	70	..	30	....
Palayamkottai	6	1970 Moondradaippus	Karuvel	20.0	..	90	10	..	....
Palayamkottai	7	1970 Chettikulam	Karuvel	20.0	..	60	25	15	....
Palayamkottai	8	1974 Kannimarkulam	Karuvel	8.0	..	..	..	..	1983 Plantation felled and re planted.
			Total	244.0					
Karunkulam	1	1968 Ulakudi	Karuvel	40.5	..	25	..	75	....
Karunkulam	3	1968 Kaliavoor	Karuvel	60.7	..	..	10	90	....
			Total	101.2					
Cheranmahadevi	1	1963 Malayankulam	Karuvel, Vagai and Eucalyptus.	50.5	..	..	20	80	....
Nanguneri	1	1963 Pirandamalai	Karuvel, Vagai, Neem etc.	40.5	..	..	5	95	....
Nanguneri	2	1964 Pulialurichi	Karuvel, Vagai, Neem, etc.	40.5	..	..	100	..	....

Name of Panchayat Union	Serial nnmber	Year and Locolity.	Name of species	Area in ha.	Present condition given in percentage of the whole area				Remarks
					Good	Average	Poor	Blank	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Nanguneri	3	1964 Vijayanarayanam	Karuvel and Eucalyptus.	40.5	75	..	25	..	....
Nanguneri	4	1965 Vijayanarayanam	Karuvel	40.5	..	100	..	..	....
Nanguneri	5	1966 Vadugachimathil	Karuvel	40.5	40	50	10	..	....
Nanguneri	6	1966 Vijayanarayanam	Karuvel and Cashew	50.6	80	..	..	20	....
Nanguneri	7	1967 Ittari	Karuvel	40.5	..	65	10	25	..
Nanguneri	8	1969 Thamaraiselvi	Karuvel	4.05	..	70	10	20	....
Nanguneri	9	1969 Irappuvari	Karuvel	30.4	....	100	..	..	....
Nanguneri	10	1969 Panayankulam	Karuvel	20.3	..	80	10	10	....
Nanguneri	11	1969 Urumnam	Karuvel	40.5	50	30	20	..	....
Nanguneri	12	1969 Panayankulam	Cashew	10.2	..	..	30	70	....
Nanguneri	13	1970 jeerkulam	Karuvel	20.0	..	80	..	20	....
Nanguneri	14	1971 Vijayanarayanam	Karuvel	68.0	..	20	70	10	....
Nanguneri	15	1971 Eliyaneri	Karuvel and Odai	14.0	..	100	..	..	....
Nanguneri	16	1971 Nedumankulam	Karuvel	14.0	..	80	20	..	....
Nanguneri	17	1971 Ponnakudi	Karuvel	20.0	..	90	..	10	....
Nanguneri	18	1971 Thottakudi	Karuvel	24.0	..	35	..	65	....
Nanguneri	19	1972 Vijayanarayanam	Karuvel	30.0	..	80	..	20	....
Nanguneri	20	1972 Pattarpuram	Karuvel	20.00	..	70	..	30	....
Nanguneri	21	1973 Vijayanarayanam	Karuvel	30.0	..	85	15	..	....
Nanguneri	22	1973 Sevugankulam	Karuvel	20.0	..	90	..	10	....
Nanguneri	23	1973 Unnakulam	Karuvel	20.0	..	85	..	15	....
Nanguneri	24	1973 Nanguneri	Karuvel	34.0	..	90	..	10	....
Nanguneri	25	1973 Ponnakudi	Karuvel	40.0	..	75	..	25	....
Nanguneri	26	1973 Pillaikulam	Karuvel	20.0	..	80	..	20	....
Nanguneri	27	1974 Ponnakudi	Karuvel	12.1	..	..	..	..	....
Nanguneri	28	1974 Elankulam	Karuvel	30.1	..	..	..	..	....
Nanguneri	29	1974 Anumanpudukulam	Karuvel	30.0	..	..	..	..	....
Nanguneri	30	1974 Sadayanerikulam	Karuvel	17.1	..	..	..	..	....

Nanguneri	31	1974 Savalakarankulam	Karuvel	12.0	..	..	..	..	
Nanguneri	32	1974 Elayaneri	Karuvel	20.0	..	..	..	..	
Nanguneri	33	1974 Nanguneri	Karuvel	84.0	..	..	..	..	
Nanguneri	34	1974 Nanguneri	Karuvel	50.5	..	..	..	..	1963 Plantation felled and re-planted.
				1,065.3					
Kalakad	1	1963 Karanthaneri	Cashew	20.2	..	100	..	..	..
Kalakad	2	1965 Kadamhoduvalvu	Karuvel	40.5	55	25	20	..	..
Kalakad	3	1965 Karanthaneri	Cashew	34.0	..	..	..	..	Failure
Kalakad	4	1973 Ayaneri	Karuvel	20.00	..	40	..	60	..
				114.7					
Valliyoor	1	1963 Kamarajanagar	Karuvel, Vagai and Neem	101.2	..	..	..	..	Failure
Valliyoor	2	1964 Kamarajanagar	Eucalyptus and Cashew	60.7	..	..	..	..	Failure.
Valliyoor	3	1965 Valliyoor	Karuvel, Vagai and Neem.	40.5	80	20	..	..	....
Valliyoor	4	1966 Achambadu	Karuvel	30.4	..	75	25	..	....
Valliyoor	5	1967 Vadakkuvalliyoor	Karuvel	40.5	..	90	10	..	....
Valliyoor	6	1969 Annaikulam	Karuvel	40.5	..	90	10	..	....
Valliyoor	7	1970 Kuravankulam	Karuvel	30.0	90	10	..	..	....
Valliyoor	8	1970 Kilavaneri	Karuvel	20.0	..	80	10	10	....
Valliyoor	9	1972 Senkulam	Karuvel	20.0	..	65	..	35	....
Valliyoor	10	1973 Thattankulam	Karuvel	10.0	..	70	..	30	....
				393.8					

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Radhapuram	1	1968 Kottaikarunkulam	Karuvel	60.7	95	5	..	..	....
Radhapuram	2	1968 Kasthurirengapuram	Karuvel	40.5	85	15	..	..	....
Radhapuram	3	1969 Koluvakulam	Karuvel	30.4	..	45	55	..	....
Radhapuram	4	1969 Tharuvaikulam	Karuvel	30.4	55	20	25	..	....
Radhapuram	5	1969 Pappankulam	Karuvel	40.5	..	15	80	5	....
Radhapuram	6	1973 Kottaikarunkulam	Karuvel	30.0	..	85	..	15	....
Radhapuram	7	1974 Samugarengapuram	Karuvel	50.0	..	..	..	..	1963 Plantation felled and re-planted.
				282.5					
Thovala	1	1963 Aramboly	Karuvel	16.6	..	70	30	..	....
Thovala	2	1965 Aramboly	Karuvel	6.5	..	100	..	..	....
				23.1					

538. *Tabular Statement of felling–*

Year of felling.	*Serial number.*	*Name and year of planting.*	*Area in ha.*	*Remarks.*
(1)	(2).	(3)	(4)	(5)
1975–76	1	1963 Chettikulam	13.9	....
	2	1963 Parpakulam	20.2	....
	3	1963 Pirandamalai	40.5	....
	4	1963 Kamarajanagar	101.2	Failure.
	5	1963 Aramboly	16.6	....
	6	1963 Malayankulam	50.5	....
	7	1964 Puliakurichi	40.5	....
	8	1964 Vijayanarayanam	40.5	....
	9	1964 Kamarajanagar	60.7	Failure.
	10	1965 Vijayanarayanam	40.5	....
	11	1965 Kadamboduvalvu	40.5	....
	12	1965 Valliyoor	40.5	....
	13	1965 Aramboly	6.5	....
1976–77	1	1966 Vadugachimathil	40.5	....
	2	1966 Vijayanarayanam	50.6	....
	3	1966 Achambadu	30.4	....
1977–78	1	1967 Konganthanparai	40.5	....
	2	1967 Ittari	40.5	....
	3	1967 Vadakkuvalliyoor	40.5	....
1978–79	1	1968 Gangaikondan	80.9	....
	2	1968 Muthur	40.5	....
	3	1968 Sivalaperi	80.9	....
	4	1968 Ulakudi	40.5	....
	5	1968 Kaliavoor	60.7	....
	6	1968 Kottaikarunkulam	60.7	....
	7	1968 Kasthurirengapuram	40.5	....
1979–80	1	1969 Manur	121.4	....
	2	1969 Thamaraiselvi	40.5	....
	3	1969 Irappuvari	30.4	....
	4	1969 Panayankulam	20.3	....
	5	1969 Urumanam	40.5	....
	6	1969 Annaikulam	40.5	....
	7	1969 Koluvakulam	30.4	....
	8	1969 Tharuvaikulam	30.4	....
	9	1969 Pappankulam	40.5	....
1980–81	1	1970 Manur	10.0	....
	2	1970 Moondradaippu	20.0	....
	3	1970 Chettikulam	20.0	....
	4	1970 Jeerkulam	20.0	....
	5	1970 Kuravankulam	30.0	....
	6	1970 Kilavaneri	20.0	....
1981–82	1	1971 Vijayanarayanam	68.0	....
	2	1971 Eliyaneri	14.0	....
	3	1971 Nedumankulam	14.0	....
	4	1971 Ponnakudi	20.0	....
	5	1971 Thottakudi	24.0	....
1982–83	1	1972 Abishekapatti	70.0	....
	2	1972 Vijayanarayanam	30.0	....
	3	1972 Pattarpuram	20.0	....
	4	1972 Senkulam	20.0	....

Year of felling.	Serial number.	Name and year of planting.	Area in ha.	Remarks.
(1)	(2)	(3)	(4)	(5)
1983–84	1	1973 Abishekapatti	40.0	....
	2	1973 Vijayanarayanam	30.0	....
	3	1973 Sevugankulam	20.0	....
	4	1973 Unnankulam	20.0	....
	5	1973 Nanguneri	34.0	....
	6	1973 Ponnakudi	40.0	....
	7	1973 Pillaikulam	20.0	....
	8	1973 Ayaneri	20.0	....
	9	1973 Thattankulam	10.0	....
	10	1973 Kottaikarunkulam	30.0	....
1984–85	1	1974 Abishekapatti	46.1	....
	2	1974 Kannimarkulam	8.0	....
	3	1974 Ponnakudi	12.1	....
	4	1974 Elankulam	30.1	....
	5	1974 Anumanpudukulam	30.0	....
	6	1974 Sadayanerikulam	17.1	....
	7	1974 Savalakarankulam	12.0	....
	8	1974 Elayaneri	20.0	....
	9	1974 Nanguneri	84.0	....
	10	1974 Nanguneri	50.5	....
	11	1974 Samugarengapuram	50.0	....

539. *List showing the Area available for Planting—Tankbed and Plain Areas in the Taluks of Tirunelveli District under Farm Forestry.*

Serial number.	*Village number.*	*Name of the villages.*	*Area available in Tankbeds and Porambokes in ha.*	*Area suitable for Farm Forestry in ha.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
		I. SRIVAIKUNTAM TALUK :			
		(*a*) *Karunkulam Block.*			
1	54	Karunkulam	32.4	30.0	....
2	5	Kilavallanadu	45.0	40.0	....
3	15	Manakarai	20.2	20.2	....
4	1	Ulagudi	80.9	80.9	40.5 ha. already planted.
5	49	Vasavappapuram	20.2	20.2	....
		(*b*) *Srivaikuntam Block.*			
6	27	Perunkulam	40.5	40.5	....
7	26	Sivagalai	50.0	45.0	....
		(*c*) *Tuticorin Block.*			
8	88	Mappilaiurani	60.7	58.0	....
9	78	Perurani	44.6	44.6	....
10	75	Timmarajapuram	20.2	20.2	....
		II. KOILPATTI TALUK :			
		(*a*) *Kayathar Block*			
11	27	Therkkailandikulam	30.4	30.0	....
12	31	Thirumangalakurichi	20.2	20.2	....
		(*b*) *Koilpatti Block.*			
13	84	Koilpatti	20.2	20.2	....
14	82	Killavaipuram	20.2	20.2	....
15	77	Lingampatti	80.9	80.0	....
16	83	Monthaithopu	60.7	60.0	....
17	46	Thonukal	55.0	55.0	....
		(*c*) *Ottapidaram Block.*	Nil.	Nil.	....
		(*d*) *Pudur Block*	Nil.	Nil.	....
		(*e*) *Vilathikulam Block*	Nil.	Nil.	....
		III. TIRUCHENDUR TALUK :			
		(*a*) *Alwarthirunagari Block*	Nil.	Nil.	....
		(*b*) *Satankulam Block*	Nil.	Nil.	....
		(*c*) *Tiruchendur Block*	Nil.	Nil.	....
		(*d*) *Udangudi Block*	Nil.	Nil.	....
		IV. NANGUNERI TALUK :			
		(*a*) *Kalakad Block* :			
18	6	Kallikulam	40.5	40.5	....
19	67	Keelakarunkulam	35.4	15.0	....
		(*b*) *Nanguneri Block.*			
20	54	Rajakalmangalam	80.9	80.0	....
		(*c*) *Radhapuram Block*	Nil.	Nil.	....
		(*d*) *Vallaiyoor Block*			

Serial number.	*Village number.*	*Name of the villages.*	*Area available in Tankbeds and Porambokes in ha.*	*Area suitable for Farm Forestry in ha.*	*Remarks.*
1)	(2)	(3)	(4)	(5)	(6)
21	42	Karungulam	25.0	25.0	....
22	43	Palavoor	20.2	20.0	....
23	51	Vadakkuvailiyoor	50.0	50.0	40.5 ha. already planted.
		V. TIRUNELVELI TALUK			
		(a) Manur Block.			
23A	9	Azhagiapandiapuram	20.2	20.2	....
24		Chedurayanputhur	30.0	30.0	....
25	4	Ettankulam	60.7	60.7	....
26	3	Kalakkudi	25.0	25.0	....
27	31	Kodaganallur	45.0	40.0	....
28	33	Kondanagaram	20.2	20.2	....
29	5	Madavakurichi	24.3	24.0	....
30	107	Nanjankulam	55.0	55.0	....
31	36	Narasinganallur	20.2	20.0	....
32	32	Palavoor	24.3	24.0	....
33	27	Puthur	40.5	40.0	....
34	29	Sankanthiradu	30.0	30.0	....
35	20	Thalayuthu	35.0	35.0	....
36	14	Thenkulam	28.3	28.0	....
37	105	Vagaikulam	40.5	40.0	....
		(b) Palayamkottai Block			
38	43	Kunnathur	80.0	80.0	....
39	103	Muthur	143.7	143.0	....
40	89	Nochikulam	20.2	20.0	....
41	144	Reddiarpatti	32.4	32.0	....
42	102	Sivanthipatti	50.0	50.0	....

River Fringe and Canal Bank Plantations.

540. *History.*—Tamil Nadu became poorer in Teak with the transfer of the best Teak Plantations to Kerala during State reorganisation. So it became imperative to raise Teak wherever the soil and moisture conditions were favourable. The river fringe and canal banks came in handy for the purpose. So a special division was formed in 1956 with headquarters at Thanjavur and a Range Officer attached to the division was Stationed at Palayamkottai. He raised plantations in 1956, 1957 and 1958 along the Thambiraparani river banks and its canals. In all 123.4 ha. were planted in bits and handed over to the District Forest Officer, Tirunelveli South Division for maintenance on 16th July 1959.

541. Plantations raised in compact areas were retained by the Forest Department but linear plantations raised over an extent of 51.00 ha., as avenues along canal banks were handed over to Public Works Department on 31st March 1962 as per Government orders. The relevant notification is given below :—

Draft Notification

NOTIFICATION I.

542. Under Section 2 of the Madras Forest Act, 1882 (Madras Act V of 1882) the Governor of Madras hereby appoints the Assistant Engineer, Public Works Department, Srivaikuntam to discharge the function of the Forest Officer under the said Act and the rules made there under in respect of the plantations scheduled below, raised by the Forest Department and handed over to the Public Works Department for protection.

Schedule.

I. *Teak Avenue Plantations* 1957 *along both banks of South Main Channel :*

Area	22 acres.
District	Tirunelveli.
Taluk	Srivaikundam.
Village	1. Vellur Pudukudy. 2. Adinathapuram. 3. Alagiamanalapuram. 4. Alwarthirungari.
S. No. 1. Vellur pudukudy Village	528, 51, 50, 63, 62, 60, 533, 534, 535, 538, 539 and 540.
S. No. 2. Adinathapuram Village	870 and 877.
S. No. 3. Alwarthirunagari Village	867
S. No. 4. Alagiamanavalapuram Village	8, 16, 17 and 21.

II. *Teak Avenue plantations* 1957 *near Kadayanodai Block I :*

Area	4 acres.
District	Tirunelveli.
Taluk	Tiruchendur.
Village	Therukkakalur.
S. Nos.	374, 375, 376, 377, 378, 379, 390 392, 393 and 402.

III. *Teak Avenue pantation* 1957 *near Kadayanodai Block II :*

Area	1 acre
District	Tirunelveli
Taluk	Tiruchendur
Village	Kadayanodai
S. Nos.	9 & 20/2.

IV. *Teak Avenue plantation* 1957 *near Kadayanodai Channel :*

Area	3 acres
District	Tirunelveli
Taluk	Tiruchendur
Village	Kadayanodai.
S. No.	71/1.

V. *Teak Avenue Plantation* 1958 *along the left bank of Seithukkuvoithan Channel* :

Area	16 acres
District	Tirunelveli
Taluk	1. Tiruchendur 2. Srivaikuntam
Village	1. Mavadipannai 2. Thenthirupathi Rajapathi 3. Seithukkuvoithan 4. Korkai 5. Melathur

S. Nos. 1. Mavadipannai Village : 82, 83, 84, 86, 87, 88, 89, 90 and 100.
2. Thenthirupathi Rajapathi : 1011.
3. Seithukkuvoithan Village : 1012 and not surveyed.
Surveyed area 3.13 acres.
4. Korkai Village : 662.
5. Melathur Village : 613, 614 and 617.

VI. *Teak Avenue Plantation* 1957 *along both banks of North Main Channel* :

Area	80 acres
District	Tirunelveli
Taluk	Srivaikuntam
Village	1. Sriparankuthanallur. 2. Thirupaliankudi 3. Varadarajapuram 4. Kilapadagaiappan koil 5. Kilapadagai Kasba. 6. Mankalakurichi.

S. Nos.— 1. Sriparankuthanallur 72, 86 and 87.
2. Thirupuliankudi : 14/1.
3. Varadarajapuram : 307, 457, 492, 493, 495, 496, 497, 498 and 499.
4. Kilapadagaiappakoil : 439 to 551.
5. Kilapadagai Kasba .. 767 to 769, 771, 773, 774, 775, 776, 777 and 785 to 790.
6. Mangalakurichi : 526, 527 and 529 to 533.

NOTIFICATION II.

543. In exercise of the power conferred by Clause (d) of Section 59 of Madras Forest Act, 1882 (Madras Act V of 1882), the Governor of Madras hereby invest the Assistant Engineer, Public Works Department, Srivaikuntam referred to in Notification No.1 supra with the power under Section 55 of the said Act to accept compensation for Forest offences arising in respect of the plantations scheduled to the Notification No. I.

544. Subsequent to 1959 plantation were raised in the river fringes by the Tirunelveli South Division staff and various species like Dalbergia sissoo, Casurina equisetifolia, Pongamia glabra, Eucalyptus hybrid and Tectona grandis. The list of plantations is given in Para 558.

545. *Object of Management.*—The extent of forests in Tamil Nadu is getting reduced by in roads for the construction of Hydro-electric and irrigation projects and by dis-reservation for cultivation of agricultural crops so it is necessary to bring under tree crops all Government lands which are lying waste. In this direction one of the schemes introduced is afforestation of River Fringe and Canal Banks The object to be achieved is afforesation of suitable areas along the river fringes and canal banks which will help to protect the banks from erosion and augment supply of timber and fuel requirements of local population in addition to catering to the aesthetic needs of the public.

546. *General Constitution* —This scheme covers all areas suitable for regeneration along the Tambaraparani River Fringes and the irrigation canal banks of Tambaraparani and Manimuthar Rivers.

547. *Division of the area.*—The existing plantations along the Tambaraparani River and its Canals including failed areas will be one planting series: the other planting series will be along Manimuthar Canal Banks.

548. *Analysis and valuation of the crop.*—The Teak planted along the canal banks has done well. The growth is phenominal in certain places, though lack of protection has caused set back in a few places. Further, limited area only is available for future planting of Teak. In the oase of river fringe plantations, by the and large they are good. Teak gas grown well but needs to be thinned. Sissco has grown very well so also Eucalyptus hybrid. The other important miscellaneous species have fared fairly well. But care has to be taken in the selection of species with references to site. In the anxiety to get more area planted mid-stream planting has been done which has been washed away.

549. *Method of treatment.*—The silvicultural system adopted will be clearing the site followed by artificial regeneration.

550. *Choice of species.*—The species suggested are Teak, Dalbergia sissoo, Eucalptus hybrid, Pongamia glabra, Bamboos, Ceiba pentandra, Acacia planifrons and ferruginea.

551. *Rotation.*—It is too early to fix rotation but depending on the species and the condition of growth exploitation can be done at the discretion of the District Forest Officer after obtaining orders from the Conservation of Forests.

552. *Silvicultural Regulation.*—The existing plantations will be improved and maintained by carrying out tending and thinning operations as deemed necessary by the District Forest Officer with reference to information given in the list of plantations appended.

553. *Regulation of Regeneration Operations.*—The Canal Banks of the Manimuthar River were inspected and the areas available on both the flanks, excluding the road, found suitable for raising trees are given in the statement appended Starting from 1976 every year a length of 5 KMs will be planted. Plants can be raised in more 2 M. apart and at an espacement of 2 M. Container plants of prescribed species will be planted in 30 Cms. cubic pits at the onset of North-East Monsoon Casualties willbe replaced during the first year by the end of December as and when noticed and in the second year also. Soil Working around the plants to a width of 50 cms. will be done twice a year for the 1st 2 years the 1st weeding will be during the 1st week of October if planted earlier: and the 2nd in December before the last showers.

554. *Other Reguations.*—The Plantations are raised in lands with the P.W.D. In G.O. Ms. No. 312, Food and Agriculture, dated 4th February 1960 it is stated that these lands, where planttations are taised might, be notified as reserved lands under Section 26 of the Madras Forest Act and the P.W.D. Officers notified as Forest Officers under the said act.

555. The Forest Department will raise plantations with its own staff. The linear plantations along river and canal banks will be handed over to the P.W.D. Department after two years and therafter the plantations will be looked after with the aid of the lascars under their control. However, silvicultural operations like thinning, etc., will be attended to by the Forest Department and the revenue obtained from such operations will be credited to the Forest Department as per Goverment Memo. No. 6072/60-20, Agriculture Department, dated 30th November 1970.

556. The protection and after care of all the compact blocks of plantations will continue to be the responsibility of the Forest Department so the protective staff will be from the Forest Department who will attend to any cultural operations that have to be carried out in these areas.

Staff :

557. The Forest Guards posted for protection of these plantations were not be able to effiiciently perform their duties in the absence of statutory provision supported by a Forest Act to punish the offenders. In this their hands will be strengthened when the lands are declared as reserved lands under Section 26 of the Forest Act, but all the same there should be a few plot watchers from the villages around who will be able to help in protecting these plantations. So the present staff of 4 Forest Guards can continue. As regards linear plantations along Manimuthar canal Bank one Forest Guard will be necessary and he will be helped by One Plot Watcher for each year of plantation and he can be made to hand over the plantations to the P.W.D. after 2 years and move to the new plantations.

558. *List of River Fringe Plantations in Tirunelveli South Division.*

Serial number and name of Plantation.	*Year.*	*Area in ha.*	*Species.*	*Replacement.*	*Present condition percentage of stocking.* Good.	Average.	Poor.	Blank.	*Whether can be re-generated again.*	**Remarks.**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 Srivaikuntam	1956	1.5	Teak	..	..	..	..	100	Yes.	..
2 Srivaikuntam (Avenue)	Do.	1.00	Do.	Planted up in 1966 Ponnankurichi.	..	..	..	100	Do.	..
3 Ponnankurichi	1957	4.1	Do.	Replaced with Sissco	..	50	..	50		..
4 Ponnankurichi	1957	Not known.	Cashew	..	..	..	..	100		..
5 Alwar Thirunagari (Cattle Fair)	Do.	10.9	Teak	..	..	..	20	80	Yes.	..
6 Alwarthirunagari	Do.	1.6	Do.	..	..	..	..	100		..
7 Alwar Thirunagari .. .. (Kandeswaram Temple)	Do.	1.6	Do.	..	..	..	..	100		..
8 Alwar Thirunagari .. .. (Alwar Thope)	Do.	1.6	Do.	..	..	..	..	100		..
9 Authoor (Odaiyarpatti)	Do.	3.6	Do.	..	70	..	..	30	Thinning necessary.	..
0 Authoor (Sendamangalam)	Do.	2.6	Do.	Replaced with Pungam	..	40	..	60		
11 Karungulam	1958	8.5	Do.	..	70	..	..	30	Thinning necessary.	..
12 Ponnankurichi	1958	9.9	Teak	..	..	50	..	50	Thinning necessary.	..
13 Eral-Chairmankoil 1957 (Surplus Channel 1958 Thirudavilai)	Do.	8.1	Do.	Replaced with pungam	..	..	..	..		..
14 Karungulam	1960	16.2	Miscellaneous	..	70	..	..	30		..
15 Ponnankurichi	Do.	17.8	Sissoo	..	..	50	..	50		..
16 Authoor	1961	17.8	Miscellaneous	..	..	..	10	90	Yes.	..
17 Karungulam	1963	2.8	Do.	..	70	..	..	30		..
18 Srivaikuntam	Do.	5.7	Do.	..	..	..	..	100	Yes.	..
19 Alwarthirunagari	Do.	4.9	Do.	..	65	..	..	35		..
20 Keelpidagai	Do.	4.9	Casuarina	Replaced with Teak	..	..	..	100	Yea.	..
21 Authoor	Do.	2.1	Eucalyptus	..	80	..	..	20		..
22 Karungulam	1964	1.2	Miscellaneous	..	70	..	..	30		..
23 Srivaikuntam (Naduthittu)	Do.	1.4	Do.	..	..	..	..	1 0		..
24 Alwarthirunagari	Do.	1.4	Do.	..	..	50	..	50		..
25 Eral	Do.	1.2	Do.	..	..	0	..	0		..
26 Authoor	Do.	1.2	Do.	..	..	..	30	70		..
Kaliavoor	1965	2.4	Do.	..	..	..	10	90	**Yes.**	..

28. Karungulam	1965	3.6	Miscellaneous ..	....	..	40	..	60	..	
29. Srivaikuntam (Naduthittu)	Do.	3.6	Do.	Replaced with Accacia plani-frons.	90	..	..	10	..	..
30. Alwarthirunagari	Do.	2.4	Do.	....	..	..	10	90	..	..
31. Kelepidagai	,,	4.9	Do.	....	..	..	..	100	Yes	..
32. Eral	,,	3.6	Do.	....	..	60	..	40	..	..
33. Authoor	,,	3.6	Do.	....	..	40	..	60	..	..
34. Kaliavoor	1966	1.6	Do.	....	..	..	..	100	Yes	..
35 Murappanad	,,	1.7	Do	Replaced with Sissoo.	90	..	..	10	..	..
36. Karungulam	,,	1.6	Do.	....	90	..	..	10	..	..
37. Ponnankurichi	,,	1.6	Do.	....	..	60	..	40	..	..
38. Srivaikuntam (Naduthittu)	,,	1.6	Do.	....	..	..	..	100	No	..
39. Srivaikuntam	,,	1.6	Do.	Replaced with Accacia auriculi formis.	..	..	10	90	Yes	..
40. Alwarthirunagari	,,	1.6	Do.	....	..	..	10	90	Yes	..
41. Keelpidagai	,,	1.6	Do.	....	..	50	..	50	..	..
42. Eral(Chairmankoil)	,,	1.6	Do.	....	..	..	..	100	Yes	..
43. Eral	1966	1.6	Do.	....	..	..	30	70	..	..
44. Authoor (Mukkani Bridge)	,,	1.6	Do.	....	..	..	20	80	Yes	..
45. Authoor	,,	1.6	Do.	....	..	..	..	100	,,	..
46. Kaliavoor	1967	1.8	Do.	....	..	..	15	85	,,	..
47. Murappanad	,,	1.7	Do.	Replaced with Sissoo	80	..	..	20	..	..
48. Karungulam	,,	1.6	Do.	....	90	..	..	10	..	..
49. Ponnankurichi	,,	1.6	Do.	....	..	..	..	100	Yes	..
50. Srivaikuntam (Naduthittu)	,,	1.6	Do.	....	..	..	..	100	No	..
51. Srivaikuntam	,,	1.6	Do.	....	..	..	..	100	Yes	..
52. Alwarthirunagari	,,	1.6	Do.	....	..	..	..	100	Yes	..
53. Keelpidagai	,,	1.6	Do.	....	..	..	..	100	Yes	..
54. Eral (Chairman koil)	,,	1.6	Do.	....	..	..	..	100	Yes	..
55. Eral	,,	1.6	Do.	....	..	..	..	100	Yes	..
56. Authoor (Mukkani Bridge) . .	,,	1.6	Do.	..	..	..	..	100	Yes	..
57. Authoor	,,	1.6	Do.	..	..	..	30	70	..	..
58 Kaliavoor	1968	1.6	Do.	..	..	..	..	100	Yes	..

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
59. Murappanad	1968	1.7	Miscellaneous.	Replaced with Sissoo	80	..	..	20	Yes	..
60. Karungulam	"	1.6	Do.	..	90	.	.	10	.	.
61. Ponnankurichi	"	1.6	Do.	..	90	.	.	10	..	..
62. Srivaikuntam (Naduthittu)	"	1.6	Do.	....	..	.	.	100	No	.
63. Srivaikuntam	"	1.6	Do.	..	70	.	.	30	.	..
64. Alwarthirunagari	"	1.6	Do.		90			10		
65. Keelpidagai	"	1.6	Do.	....	80	..	..	20	..	..
66. Eral (Chairmankoil)	"	1.6	Do.		..	..	..	100	Yes	
67. Eral	"	1.6	Do.	....	..	..	..	100	Yes	..
68. Authoor (Mukkani Bridge)	"	1.6	Do.	....	..	..	..	100	Yes	..
69. Authoor	"	1.6	Do.	....	80	..	..	20	..	..
70. Kaliavoor	1969	4.00	Do.	....	..	..	..	100	Yes	..
71. Murappanad	"	4.00	Do.	...	..	60		40		
72. Karungulam	"	4.00	Do.	....	..			100	Yes	
73. Ponnarurichi	"	4.00	Do.	....	70	..	..	30	..	..
74. Ponnarurichi	"	2.00	Casuarina	....	..	..	20	80	..	..
75. Thoallppan Pannai	"	2.00	Miscellaneous	Replaced 1973	..	..	..	100	..	..
76. Srivaikuntam (Nadu Thittu)	"	4.00	Do.	....	..	..	..	100	No	..
77. Srivaikuntam	"	4.00	Do.	....	..	..	..	100	Yes	..
78. Alwarthirunagari	"	6.00	Do.	....	..	..	20	80	..	..
79. Keelpidagai	"	4.00	Do.	....	..	..	..	100	Yes	..
80. Eral (Chairmankoil)	"	4.00	Do.	....	..	..	..	100	Yes	..
81. Eral	"	4.00	Do.	....	..	..	..	100	..	..
82. Authoor	"	4.00	Do.	....	..	..	..	100	..	..
83. Kaliavoor	1970	6.00	Do.	....	..	..	..	100	No	..
84. Murappanad	"	3.00	Do.	....	..	..	35	65	..	..
85. Karungulam	"	2.00	Do.	....	..	..	35	65	..	..
6. Ponnankurichi	"	4.00	Do.	....	..	..	..	100	Yes	..

87. Thollappan Pannai	170	3.00	Miscellaneous.	To be replaced 1974	..	..	..	100	..	..
88. Srivaikuntam (Nadutnittu)	"	3.00	Do.	....	..	..	..	100	No	..
89. Srivaikuntam	"	3.00	Do.	..	..	..	..	100	Yes	..
90. Alwarthirunagari	"	4.00	Do.	..	..	..	..	100	"	..
91. Keelpidagai	"	3.00	Do.	....	..	..	..	100	"	..
92. Eral (chairmankoil)	"	3.00	Do.	....	..	..	..	100	"	..
93. Eral	"	3.00	Do.	....	..	..	..	100	"	..
94. Authoor	"	3.00	Do.	....	..	..	..	100	"	..
95. Murappanad	1971	6.00	Do.	....	..	..	..	100	No.	..
96. Karungulam	"	8.00	Do.	4 ha. Replaced on opposite bank.	70	..	..	30	..	..
97. Ponnankurichi	"	8.00	Do.	....	..	..	..	100	Yes	..
98. Srivaikuntam	"	4.00	Do.	....	..	..	..	100	"	..
99. Alwarthirunagari	"	6.00	Do.	....	..	..	..	100	"	..
100. Keelpidagai	"	8.00	Do.	....	..	..	..	100	"	..
101. Murappanad	1972	6.00	Do.	....	..	..	..	100	No	..
102. Karungulam	"	8.00	Do.	....	80	..	..	20	..	..
103. Ponnankurichi	"	6.00	Do.	....	..	..	..	100	Yes	..
104. Ponnankurichi	"	1.00	Bamboo	....	..	..	..	100	No	..
105. Srivaikuntam	"	5.00	Miscellaneous	....	..	..	20	80	..	..
106. Alwarthirunagari	"	8.00	Do.	....	..	..	..	100	..	..
107. Karungulam	1973	8.00	Do.	....	..	60	..	40	..	..
108. Ponnankurichi	"	6.00	Do.	....	..	..	..	..	..	..
109. Ponnankurichi	"	1.00	Bamboo	....	..	..	..	100	No	..
110. Srivaikuntam	"	6.00	Miscellaneous	....	..	50	..	50	..	..
111. Alwarthirunagari	"	10.00	Do.	....	80	..	..	20	..	..
112. Keelpidagai	"	9.00	Do.	....	70	..	..	30	..	..

559. The following statement showing the requirement of seedlings (approximately) for raisin at 2m X 2m spacement along Manimuthu- Main Canal.

TOTAL LENGTH: 46.600 KMS.

Distance in Kms.	*Left Bank.*		*Right Bank.*		*Total.*
	Outer slope.	*Inner slope.*	*Inner slope.*	*Outer slope.*	
(1)	(2)	(3)	(4)	(5)	(6)
1/0 to 1/0	2,000	..	..	..	2,000
1/0 to 2/0	1,500	..	..	..	1,500
2/0 to 3/0	2,000	..	..	..	2,000
3/0 to 4/0	1,000	..	..	..	1,000
4/0 to 5/0	2,000	500	500	Nil.	3,000
5/0 to 6/0	1,500	500	500	1,500	4,000
6/0 to 7/0	1,500	500	500	1,500	4,000
7/0 to 8/0	1,500	500	500	1,500	4,000
8/0 to 9/0	2,500	500	500	1,500	5,000
9/0 to 10/0	2,500	500	500	2,000	5,500
10/0 to 11/0	3,000	500	500	1,500	5,500
11/0 to 12/0	2,500	500	500	1,500	5,000
12/0 to 13/0	2,500	1,000	1,000	2,000	6,500
13/0 to 14/0	2,000	500	500	2,000	5,000
14/0 to 15/0	1,500	..	..	1,500	3,000
15/0 to 16/0	2,000	1,000	500	1,500	5,000
16/0 to 17/0	2,500	1,000	1,000	1,000	5,500
17/0 to 18/0	2,000	1,000	500	..	3,500
1 ,0 to 19/0	1,500	500	1,000	..	3,000
19/0 to 20/0	1,500	500	1,000	1,500	4,500
20/0 to 21/0	1,000	500	1,000	1,500	4,000
21/0 to 22/0	500	500	1,000	1,000	3,000
22/0 to 23/0	1,000	500	1,000	1,000	3,500
23/0 to 24/0	2,000	1,000	1,500	2,000	6,500
24/0 to 25/0	2,000	1,000	1,500	2,000	6,500
25/0 to 26/0	2,000	1,000	1,000	1,500	5,500
26/0 to 27/0	2,000	1,000	1,500	1,500	6,000
27/0 ot 28/0	1,000	1,000	1,000	1,000	4,000
28/0 to 29/0	1,500	1,000	1,000	2,000	5,500
29/0 to 30/0	2,000	1,000	5,000	1,000	4,500
30/0 to 31/0	3,000	500	500	1 500	5,500
31/0 to 32/0	1,500	500	500	1 000	3,500
32/0 to 33/0	2,000	1 000	500	1 000	4 500
33/0 to 34/0	1,000	1 000	1 000	1,500	4,500
34/0 to 35/0	2,500	1,000	1,000	1,500	6,000
35/0 to 36/0	1,500	1,000	1,000	1,000	5,000
36/0 to 37/0	2,000	500	1,000	2,000	5,500

Distance in KMs.	Left Bank. Outer slope.	Left Bank. Inner slope.	Right Bank Inner slope.	Right Bank Outer slope.	Total number of seedings.
(1)	(2)	(3)	(4)	(5)	(6)
37/0 to 38/0	1,500	500	500	1,500	4,000
38/0 to 39/0	1,000	Nil.	Nil.	500	1,500
39/0 to 40/0	1,000	500	500	500	2,500
40/0 to 41/0	2,000	1,000	1,000	1,500	5,500
41/0 to 42/0	1,500	1,000	1,000	1,500	5,000
42/0 to 43/0	2,000	1,000	1,000	2,000	6,000
43/0 to 44/0	2,000	1,000	1,000	2,000	6,000
44/0 to 45/0	2,000	1,000	1,000	2,000	6,000
45/0 to 46/0	2,000	1,000	1,000	2,000	6,000
46/0 to 46/600	1,500	500	500	5,050	4,000
	84,000	31,000	33,500	60,000	2,08,500

DISTRIBUTORY No. 11.

Distance in KMs.	Left Bank. Outer slope.	Left Bank. Inner slope.	Right Bank Inner slope.	Right Bank Outer slope.	Total number of seedings.
0/0 to 1/0	2,000	500	500	2,500	5,500
1/0 to 2/0	2,000	1,000	1,000	2,500	6,500
2/0 to 3/0	2,000	1,000	1,000	2,000	6,000
3/0 to 4/0	2,000	1,000	1,000	2,000	6,000
4/0 to 5/0	2,000	1,000	,000	2,000	6,000
5/0 to 6/0	2,000	1000	1,000	2,000	6,000
6/0 to 7/0	2,500	1000	500	1,000	6,000
7/0 to 8/0	2,500	500	500	5 000	5,500
8/0 to 9/0	2,500	1 000	1,000	2,500	7,000
9/0 to 12/0	2,000	500	500	2,500	5,500
10/0 to 11/0	3,000	500	500	2,000	5,000
12/0to 10/0	2,000	500	500	2,000	5,000
12/0 to 13/0	2,000	500	500	2,000	5,000
13/0 to 14/0	2,000	500	500	2,000	5,000
15/0 to 15/0	2,500	500	500	2,500	6,000
14/0 to 16/0	2,000	500	500	2,000	5,000
16/0 to 17/0	1,500	500	500	1,500	4,000
17/0 to 18/0	1,000	500	500	1,000	3,000
18/0 to 19/0	1,000	500	500	1,000	3,000
19/0 to 20/0	1,000	500	500	1,000	3,000
20/0 to 21/0	1,000	500	500	1,000	3,000
21/0 to 22/0	1,500	500	500	1,000	3 500
22/0 to 23/0	1,500	500	500	1,500	4,000
23/0 to 23/344	1,000	500	500	1,000	3,000
	43,500	15,500	15.500	3,500	117 500

SEA COAST PLANTATIONS.

560. To arrest the shifting of sands along the sea-coast near Puthanthurai and Kovalam in Kanyakumari District‘ a scheme was launched in 1960 to plant the area with Casuarina. This is done by the Forest Department under Agriculture and Fisheries Plantation Scheme. The list of Plantations is given below :—

Serial number.	*Year of plantation.*	*Extent in Ha.*	*Species.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
1	1960	1.45	Casuarina	
2	1961	0.41	Casuarina	
3	1962	0.26	Casuarina	
4	1963	0.69	Casuarina	
5	1965	0.43	Casuarina	
6	1966	0.77	Casuarina	
7	1967	0.56	Casuarina	
8	1968	0.38	Casuarina	
9	1969	0.38	Casuarina	
10	1970	0.44	Casuarina	
11	1971	0.66	Casuarina	
12	1972	1.48	Casuarina	
13	1973	1.48	Casuarina	
14	1974	2.40	Casuarina	
15	1975	10.00	Acacia planifrons	
	Total	21.79		

561. Casuarina raised in rows as wind brake has grown well. But Acacia planifrons planted in between has not established. There is no further area available in the locality for planting. These plantations will have to be periodically inspected and maintained.

Introduction of Pines in Upper Kodayar.

562. When the construction of Upper Kodayar Dam was taken up the forest growth (Tropical Wet evergreen forests) falling within the submergible area was cleared. Useful timber species were removed and the unwanted growth was left behind. When the dam construction was completed it was found that many islands were seen above the F.R.L. (Full Reservoir Level) and also some areas around the lake above the F.R.L. were found cleared of tree growth having been included in the coupes. These areas present a very ugly apperance with tank useless growth, a few unwanted tree species and innumerable stumps. With a view to re-afforest these sopts on economic and aesthetic grounds small scale plantations were raised starting in 1972 and the species raised were Grevillea robusta, bamboos, reeds and Eucalyptus grandis. In 1974 Albizzia falcata has been added to the list.

563. To go by the success of the previous years' plantations Eucalyptus grandis alone gives ome encouragement but this species does not tolerate competition and the inter space has to be skinned which means huge cost and heavy soil wash into the lake.

564. In the search for an alternate species, the Working Plan Officer collected Pinus patula seedlings from Gundar Nursery Kodaikanal and planted them in Upper Kodayar on 6th December 1974 over a small site of 20 m. X 20 m. by digging 30 cms. cube pits at 2½ m. X 2½ m. along with Pinus patula, Pinus carebea and Eucalyptus macrorrhyncha. No systematic after care could be bestowed by the Working Plan staff inspite of this, Pinus patula has shown promise.

565. It is believed that with proper care and under Kumri (if possible) successful plantations can be raised which will improve the aesthetic value and will bring about good revenue also.

566. So, every year Pinus patula will be planted over an extent of 10 ha. The area to be planted will be in sequence adjoining the present plantations along the lake fringe and in the islands above the F.R.L.

KANDAMPARAI TEAK PLANTATIONS.

567. Teak Plantations have been raised over an extent of about 284 ha. in Kadamparai, Singampatti Ex-Zamin Forests when under control of Court of Wards.

568. Most of these plantations appear to have been raised free of cost by Kanis of Mylar settlement by taungaya method. The exact history of these plantations is not available.

569. Out of these only 98 acres lie in Tirunelveli South Division jurisdiction. They are listed below :—

Year of planting.	*Extent in acres.*
1939	10
1940	10
1941	10
1942	10
1943	25
1944	25
1945	25

570. Thiru S. A. Rahmatullah prescribed thinning operations for these plantations and also for those which lie in Tirunelveli North Division, but these prescriptions seem to have been lost sight of, with the result, the plantations have been fully covered up and are in a state of complete neglect. However even now there are many trees which could be salvaged. A thorough cleaning operations should be done immediately and thereafter marking for thinning should be done by the District Forest Officer or his Assistant and taken care of according to the picture emerging after the above operations.

KANI SETTLEMENT

571. In 1959 there were 23 Kani Settlements in Kanyakumari District. The extent of each of these Settlements has not been furnished. The rules for the treatment and management of hillmen passed by the Travancore Government in 14th December 1911 apply to the occupation and cultivation of these Settlements by the Kanis. Finding that these Kani Settlements pose a problem in the protection of forests around, Thiru S. A. Rahmatullah prescribed in his plan certain restrictions and permanent allotment of lands based on the Number of occupants in each Kani but unfortunately these prescriptions have not been followed. Now there are 47 Kani Settlements and their total extent is 1,257.38 ha. These settlements pose a number of problems in the protection of Forests. The exact area and limits of each settlement is not well demarcated. In the name of Kanis the plainsmen cultivate vast areas in and around the settlements by raising tapioca and their frequent visits and presence is not condusive to good protection of forests. A good many cases of fires that ravage the forests can be traced to Kani Settlement. A master plan to manage these lands under a single agency with a view to afford the maximum benefit to the Kanis without being exploited by the plainsmen, and to protect the catchment areas is suggested.

Statement showing the list of Kani Settlements and other details.

Serial number and name of Reserved Forest. (1)	*Name of Kani Settlements.* (2)	*Area in ha.* (3)	*Number of huts.* (4)	*Population.* (5)	*Location.* (6)
1 Klamalai	Thalakkumalai	24.90	21	92	Near Purathimalaikani.
2 Do.	Purathimalai (2 Bits)	27.49	25	103	Adjacent to Vellarakkalkani and 1,966 Teak Regeneration areas.
3 Do.	Cherukadathukani (2 Bits)	68.17	46	208	Near State Boundary with Kerala and Chittar Rubber Division.
4 Do.	Pathukani	51.81	30	99	Adjacent to Arukani.
5 Do.	Kartuvai	8.10	8	25	Near Thalakkumalai and Pathukani.
6 Do.	Vellarakkal	20.36	12	43	Near Chittar Dam and adjoining to 1,966 Teak Regeneration area.
7 Do.	Cheppila Thodu	16.19	12	43	Near Mylar Coupe 57 and adjacent to Porai Damkani.
8 Do.	Mallamuthan	22.47	10	52	Near Poraidam and Adakadu Kanis and Mylar Coupe 50.
9 Do.	Porai Dam	27.20	10	28	In between Adkadu and Cheppila Thodu Kanis.
10 Do.	Perumkuruvi	8.66	5	18	Above Porai Dam Kani.
11 Do.	Adakadu (2 Bits)	14.53	6	30	Adjacent to Chittar Rubber Coupe X and near Perumkuruvi.
12 Do.	Thekkadi Tholayadi	12.55	7	31	Near Cherukadathukani and adjoining to State boundary of Kerala.
13 Pechiparai Grazing Block.	Ponmavilai	1.01	8	23	Near Cocoa Plot Bit I.
14 Veerapuli	Killikanam (4 Bits)	33.78	13	54	Adjoining to 1961 softwood plantations
15 Do.	Modavan Pothai	43.31	18	69	North of Pechiparai and Adjoining to Kallar Rubber Division.
16 Pechiparai Grazing Block.	Meenchila Madakku	7.59	1	8	Near Cocoa Plot Bit II.
17 Veerapuli	Mugilayadi	5.67	1	7	Adjoining to 1,969 Softwood Regeneration area 10.5 ha.
18 Do.	Korvakuzhi	20.30	9	41	In between 1,957 and 1,969 Softwood Regeneration area.
19 Klamalai	Arukani	145.10	86	317	Adjacent to Puthukani and Chittar Rubber Coupes.
20 Veerapuli	Thachamalai	24.53	20	86	North of 1,971 Softwood Regeneration area and adjoining to Pechiparai Water-spread area.
21 Veerapuli	Thottamalai	48.24	22	121	East of 1,970 Softwood Regeneration Area and adjoining to Maramalaikani.
22 Do.	Kalapparai	34.50	12	38	Near Thachamalaikani and Rock Hill Estate.
23 Klamalai	Modiramalai (2 Bits)	6.58	6	29	Near Mylar Coupe 59 and Velipilakani.
24 Veerapuli	Valayan Thukki	6.78	6	23	In between 1,967 and 1,972 Softwood Plantations.
25 Do.	Koduthurai	14.17	12	42	Near Lower Kodayar and adjoining to Kuttiyar Rubber Division.
26 Do.	Manalkadu (2 Bits)	7.08	13	41	Do.
27 Do.	Alamparai	28.57	12	43	Adjoining to 1,964 and 1,965 Softwood Plantations and Manalodai Rubber Coupes
28 Do.	Ettamkunnu	17.34	5	23	Within 1,971 Softwood Regeneration Area and adjoining to 1,967 softwood Regeneration Area.
29 Do.	Vilamalai	22.66	6	25	Near Mylar Coupe 65 and adjacent to Pechiparai Water spread area.
30 Do.	Mangamalai	23.39	12	42	Near Mylar Coupe 65 and near Lower Kodayar P. H. II.
31 Do.	Andi Pothai and Thonikuzhi	42.45	21	90	Near Pechiparai Kadambamudu and adjoining to 1,957 Softwood Regeneration area.

STATEMENT SHOWING THE LIST OF KANI SETTLEMENTS AND OTHER DETAILS—*cont.*

Serial number and Name of Reserved Forests. (1)		*Name of Kani Settlenents.* (2)	*Area in hactares.* (3)	*Number of Huts.* (4)	*Population* (5)	*Location.* (6)
32	Veerapuli	Valiamalai	46.91	24	99	In between 1964 and 1966 Softwood Regeneration areas.
33	Do.	Paduparai	12.29	3	13	Adjoining Manalodai Rubber Coupe 26.
34	Do.	Chellamkunnu	3.79	2	9	Adjoining to 1960 and 1961 Softwood Plantations.
35	Do.	Ambudum Chunai	5.83	1	7	West of Kayakaraikani, south of Vetta malaikani and adjoining Reserved Forest Boundary.
36	Do.	Kayakarai	21.35	14	54	Adjoining 1946 Manalodai Teak Re-generation area.
37	Do.	Kaduvavetti	4.45	2	8	Adjoining 1959 Kaduvavetti Softwood Regeneration area.
38	Do.	Keeraparai	26.50	10	48	Near Manalodai Rubber Plantations adjoining Vekkalimudukani.
39	Do.	Vekkalimudu	29.02	17	66	Adjoining Keeraparaikani and Manaloda Rubber Plantations.
40	Do.	Pravilai (2 Bits)	50.39	22	92	Near Manalodai Rubber Coupe 28 and adjoining 1963 Softwood Regeneration Area.
41.	Do.	Villeri (2 Bits)	55.04	25	96	Near Manalodai Rubber Coupe 27 and adjoining 1963 Softwood Regeneration area and Pravilaikani.
42.	Do.	Koovaikal	38.02	14	54	Adjoining 1967 Paraliar Teak Regeneration area and Paraliar Rubber Plantations.
43.	Do.	Maramalai	20.34	4	20	Near Chittar River and adjoining to Thattarmalaikani.
44.	Klamalai	Velipila (3 Bits)	54.64	22	70	West of Mothiramalaikani and adjoining Mylar Rubber Coupes.
45.	Veerapuli	Vettamalai	6.69	5	20	Near Ambudum Chunaikani and South o
46	Do.	Theriamedukanis	6.07	....	..	South or 1963 Softwood Regeneration area and adjoining Manalodai Rubber Plantations along with Mariankuzhi—Kalikesam Road.
47	Veerapuli R.F. and Asambu proposed R.F.	Vellambi	48.57	16	56	Near 15th Mile stone of Balamore.

572. These Kani Settlements are just like cancer within the forests. The Kanis are lethergic people and they permit outsiders to cultivate their land clandestinely and the valuable trees inside these settlements are girdled and burnt to help their cultivation. Year after year they try to increase the extent of thieir holdings in the absence of permanent demarcation to contain them with the result valuable trees in and around these settlements get destroyed.

573. To get over this problem it will be advisable to allot a compact block of forests to these kanis. Taking into consideration the Number of members of each family above 3 years of age an extent of 0.25 ha. per head can be allotted and the head man having had previleges earlier can be given a double share. This can be brought about by negotiation with a committee formed with the Collector, District Forest Officer and District Welfare Officer. If this arrangements succeeds much of the damage caused to the Forests will be stopped. The Welfare Department can undertake various measures to improve the lot of these kanis who are now being exploited by the plainsmen.

574. In case the above suggestion cannot be carried out the alternative will be to demarcate the present land holdings as per survey done by erecting ferro-concrete pillars at salient points on the ground and thus made permanent. This permanent demarcation should be verified annually with reference to the surveyed sketches and certificates furnished by the Range Officers concerned. This will help to contain these kanis within their settlements and not allow them to expand their holdings by encroachments. To consolidate further all around these kani settlements six rows of Albizzia falcata plants can be raised 3 metres apart adopting technique given under Softwood Working Circle.

575. To save the valuable trees within these settlements from being burnt down by the kanis all useful species of exploitable seize should be removed within a period of 5 years after a total enumeration. The statement below gives the programme for work suggested above.

Year of Working. (1)	*Name of Kani Settlements.* (2)	*Remarks.* (3)
1975-76	Cherukadathukani	....
	Arukani.	....
	Pathukani.	....
	Thekkadi and Tholayadi.	....
	Vellarakal.	....
1976-77	Manalikadu.	....
	Koduthurai.	
	Mothiramalai.	....
	Chekilathodu	....
	Poraidam.	....
	Thalakkumalai.	....
	Kayakarai.	....
	Keeraparai.	....
	Alamparai.	....
	Paduparai.	....
	Vellambi.	....
1977-78	Vekkalimudi .	....
	Valiamalai.	....
	Velipila.	...
	Perunkuruvi.	....
	Adakedu.	....
	Modavan Pothai.	....
	Chellam Kunnu.	....
	Purathimalai.	....
	Kantuvai.	....
	Killikanam.	....
	Maramalai.	....

Year of working	*Name of Kani settlement.*	*Remarks.*
1978-79	Vilamalai.	....
	Mangamaloi.	....
	Kaduvavetti	....
	Villeri	....
	Pravilai.	....
	Korvakuzhi.	....
	Andi Pothai and Thoni Kuzhi.	....
	Ettam kunnu.	....
	Valayan Thukki.	....
1979-80	Thachamalai.	....
	Kalaparai.	....
	Mallamuthan.	....
	Vettamalai.	....
	Ambudum Chunai.	....
	Mugilayadi.	....
	Thottamalai.	....
	Koovaikal.	....

KALIAVOOR RESERVED FOREST.

576. *Past Management.*—The Kaliavoor Reserve is a small piece of forest land (63.97 ha. in extent) bounded on the east by Maruthur—Keelakal channel and on the west by the river Thambiraparani. On the south and north it is bounded by private patta lands. It lies to the north of Palayamkottai—Tuticorin main road at a distance of 14 Kms. from Palayamkottai.

577. The area is a river bank with an annual rainfall of 50 to 70 cms. Except for the eastern fringes, the rest of the area is mostly sandy.

578. The area was under Forest Department from 1889 to 1925. During this period from 1903 to 1917 the area was divided into 15 coupes and one coupe was worked every year. The system of felling prescribed was " clearfelling " (retaining valuable species such as San dalwood, Palmyrah, Vagai, Mahogony) and them artificially regenerating the areas with bamboos, Mahogony, Vagai, and Palmyrah, The area was completely closed to grazing.

579. In the year 1925 the Public Works Department requested that the management of this forest should be handed over to the Public Works Department to prevent the silting of the Maruthur Keelakal canal by the sand blowing from the banks of the river Thambiraparani. The Government accepted the proposal and accordingly the area was handed over to Public Works Department in 1925.

580. The Public Works Department divided the area into 15 coupes and have felled up to 1958. This area has been taken probably for 3rd rotation and Coupe I was worked.

581. This reserves was taken back by the Forest Department in 1960 and a working scheme was drawn by Thiru S. A. Rahmatullah which was sanctioned in Chief Conservator's miscellaneous No. 70-67, dated 12th April 1967.

582. According to this scheme it was proposed to continue the felling of coupe, but once in 3 years and raise species like Odai and Neem. It was also suggested to regeneratee Sandalwood using Neem as the host plant.

583. Thus after taking over by the Forest Department, 4 coupes have been worked inthe years 1965 (5.3. ha.) : 1968) 4.6 ha.) : 1971 (3.5 ha.) : and 1974 (5.2. ha.). Regeneration has been attempted with Odai, Babul and Miscellaneous species immediately after felling but was not been a success.

584. *Proposal.*—This reserve occupies a land which is vulnerable for erosion by wind and water. It is essential that this land is fully clothed with vegetation at all times. Considering the fact that this land has been gone over for felling twice before and some of the coupes felled in the 3rd rotation are mostly without any vegetation, it is proposed not to have and more felling but protect the existing growth and to recloth the blank areas.

585. For another reason also this reserve has to be protected from any felling operations, as it can be developed into a tourist attraction as a picnic centre for the citizens in Tirunelveli Remnants of past regeneration operation have provided a few well grown trees of Mahogony Neem and Neermathi which add to the beauty of this reserve situated in the midst of all round green farm lands and flanked on the east and west by water courses. Further a number of Peafowls are seen here. This area will be completely protected from grazing.

SANDALWOOD.

586. A small patch of sandalwood is seen in Singampatti Ex-Zamin Forests on both sides of the road just before entering the area leased out to Bombay-Burmah Trading Corporation. The natural regneration is gradually expanding alround. Spike disease is seldom seen. It will be worthwhile to protect this area against fire and grazing. The area will be demarcated on the ground and if possible fenced so that protection is effective. No exploitation is prescribed as there are no dead trees.

(Paragraphs 586 and 588 in Page No. 165, 166 and 167 respectively).

589. Right to cultivate Cardomom in Blocks I and II in area near Muthukuly Palace, Veerapuli Reserved Forest, Azhagiapandiapuram Range was dropped in Conservator's C.No. 27761/66.LI. dated 13th April 1967 (District Forest Officer's No. 8414/66.C).

590. The lessees will pay yearly lease rent, land cess and education cess as per Government orders in vogue. The rent and cess at present are Rs. 50/ per hectare per annum, Rs. 0.12 per rupee and Re. 0.19 per rupee of rent respectively.

591. The lessees are tempted to encroach into the reserve forest after removing or altering the survey stones and discarding the number plates on the trees. So permanent demarcation should be done by erecting pillars on the ground and chiselling the numbers on the trees.

592. This work should be got completed within a year, and a special staff comprising of two parties of one Forester and a Guard can be deputed for the leases in Kanniyakumari district and Tirunelveli district respectively to work under the concerned territorial Range Officers, who will guide them and ensure satisfactory completion of the work. Thereafter yearly varification certificate should be obtained from the Range Officer concerned.

593. Most of the Caramom leases lie within the Sanctuary and the nature reserves at Upper Kodayar which is against the principles of conservation of nature. So atleast hereafter leasing out fresh areas for cardamom should be stopped.

NATURE RESERVES.

537. Forests have been denuded pretty fast in the last 2 decades. In the name of conversion to man made forests beatiful natural forests have been destroyed. But of late some awareness has come, so steps have been taken to preserve some of these forests for recreational, educational and ecological value. In Tirunelveli South Division, the entire Kalakad Reserve-Forest has been declared as Sanctuary in G.O.Ms. No. 183, Forests and Fisheries, dated 6th March 1976 and it is protected as nature reserve by virtue of this fact. But the adjoining Veerapuli Reserve Furest which also harbours the Lion tailed Macaque is not given the same protection. The Upper Kodayar nature reserve in Veerapuli Reserve Forest in Kanyakumari District is proposed.

Name.	*Location.*	*Extent*	*Boundary description.*	*Composition of Flora.*	*Details of Fauna.*	*Rainfall.*	*Altitude.*	*Temperature.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Upper Kodayar.	Veerapuli	..	*North and East.*—Starting from Mukkuttukal tri-junction of Veerapuli, Singampatti and Kalakad Forests along the common boundary between Kalakad and Veerapuli Reserve Forest till it reaches Vengainaicken anicut in Kalakad Reserve Forest. *South.*—From Vengainaicken anicut along the ridge towards west which forms the catchment upper kodayar river upto Muthukuzhi Palace (Dismantled). *West.*—Along the Forest Reserved Land of upper Kodayar Dam til it reaches the starting point Mukkuttukal.	Tropical wet evergreen forests such as Hopea parviflora, Calophyllum wightiacum, Mesua ferra, Palaquium ellipticum Bischofia javanica, Gluta tranvancorica, Alstonia scoloris, Canarium strictum, Artocarpus species, Hydnocarpus wightianna, Nephelium carpus, Sterospermum Chelonoides, Elaeocarpus species Disospyros species, Cinnamomum species, Aglaia species etc. and courtal reeds.	Tiger, Panther, Sambhur, Deer, Nilagiri macaque, Lion tailed macaque, Goiant Malabar Squirrel, Gaur, Wild Pigs, etc.	2300 mm average.	1600 M to 1800 M	15.C 25.C	Here als a feo cardamom lease exist

S. No.	Name and residence of lessee (2)	Locasion (3)	Area in ha. (4)	Amoun collectetd (5)	Vaidah (6)
				Rs. P.	
24	Thiru M.A. Subramania Raja, Rajapalayam.	Sengaltheri Beat kalaked reserved forest Nanganneri Range.	Block XV 10.1 hectare.	38,775.00	25th July 1970, to 24th July 1985.
25	Thiru V.A. Kothanda Rama Raja, Nagercoil.	Do.	Block XVI 10.1 hectare.	44,525.00	Do.
26	Mrs. Geetha George, Trivandrum ..	Area near Muthukuli, Palace, Veera-puli Reserved Forest, Azhagia-pandiapuram Range.	Block IV 15.4 hectare.	15,238.00	11th May 1967 to 10th May 1992.
27	V.O.S. Pillai, Puralur	Do.	Block V 17.8 hectare.	19,140.00	Do.
28	Mrs. A.O. Mathew, Cheppad ..	Do.	Block VI 12.5 hectare.	15,986.00	Do.
29	Sri Thomas Varghese, Trivandrum ..	Do.	Block III 17.4 hectare.	17,716.00	14th July 1967 13th July 1992
30	Mrs. Eby Jacob, Trivandrum ..	Do.	Block VII 12.9 hectare.	13,120.00	Do.
31	Mrs. Molly Varghese, Trivandrum ..	Do.	Block VIII 13.4 hectare.	13,695.00	Do.

CORDAMOM LEASES.

588. A list of Cordamom leases is given below :—

Serial number.	*Name and residence of leassee.*	*Location.*	*Area in hectare.*	*Amount collected.*	*Veidah.*
(1)	(2)	(3)	(4)	(5)	(6)
				RS. P.	
1	Dr. Mathias, Nagercoil	S. No. 3067, Ponmanai Village, Azhagiapandiapuram Range.	Bit I 10.5 hectare	2,730.00	15th May 1963 to 14th May 1988.
2	Do.	Do.	Bit II 8.9 hectare.	2,310.00	Do.
3	Mrs. Rosammal Mathias, Nagercoil	Do.	Bit IV 3.2 hectare.	840.00	Do.
4	Do.	Do.	Bit III 13.4 hectare.	1,980.00	Do.
5	Do.	Do.	Bit V 2.8 hectare.	630.00	Do.
6	Dr. M.R. Manis, Negercoil	Balamore—Veerapuli Reserve Forests	Block I 2.4 hectare.	606.00	10th November 1963 to 9th November 1988
7	Do.	Do.	Block II 21.4 hectare.	606.00	Do.
8	Do.	Do.	Block III 2.4 hectare.	606.00	Do.
9	Do.	Do.	Block IV 2.4 hectare.	606.00	Do.
10	Sri K.S.M.C. Annamalai Nadar, Ambasamudram.	Sengaltheri Beat, Kalakad Reserved Forest, Nanguneri Range.	Block I 2.0 hectare.	505.00	25th October 1963 to 24th October 1988.
11	Do.	Do.	Block II 2.0 hectare.	530.00	Do.
12	Do.	Do.	Block III 2.0 hectare.	505.00	Do.
13	Do.	Do.	Block IV 2.0 hectare.	505.00	Do.
14	Do.	Do.	Block V 2.0 hectare.	505.00	Do.
15	Do.	Do.	Block VI 2.0 hectare.	505.00	Do.
16	Do.	Do.	Block VII 2.0 hectare.	505.00	Do.
17	Do.	Do.	Block VIII 2.0 hectare.	505.00	Do.
18	Srimathi A. Panchali Ammal, Rajapalayam.	Do.	Block IX 10.1 hectare.	3,250.00	Do.
19	Sri M.P.V. Ayyanar Raja, Rajapalayam.	Do.	Block X 10.1 hectaree.	3,325.00	18th November 1963 to 17th November 1988
20	Do.	Do.	Block XI 10.1 hectare.	3,275.00	25th October 1963 to 24th October 1988.
21	Srimathi S.R. Manjammal, Ambasamudram.	Do.	Block XII 10.1 hectare.	3,400.00	25th October 1963 to 24th October 1988
22	Thirumathi A. Panchali Ammal, Rajapalayam.	Do.	Block XIII 10.1 hectare.	32,075.00	25th July 1970 to 24th July 1995
23	Thirumathi Thayammal, Ambasamudram.	Do.	Block XIV 10.5 hectare.	36,426.00	Do.

CHIP-BOARD.

594. The Madras Chip-Board Ltd., Rajapalayam is permitted to fell and remove Softwood trees from Veerapuli Reserve as per G.O. Ms. No. 3411, Agriculture, dated 31st December 1970. An agreement is executed which will be in force from 17th March 1971 to 30th December 1980.

595. The salient points of the agreement are.(i)the species permitted to be extracted are Cullenia excelsa, Eugnia species, Calophyllem species, Myristica special and any other species of Red timber ; ii) the trees selected will not be less than 180 cms. in girth (iii) the rate shall be Rs. 5 per cu.m. of merchantable Red timber at the stump.

596. Coupes each 80 acress in extent are laid on either side of the road from Nalumukku to Upper Kodayar dam.

597. The working of the coupes has been haphazard and during the period August 1971 to August 1975, 191.8 cu.m. has been removed and Rs. 968.21 only has been realised as revenue. CoupeNo.I on the right side of the road has been worked and working in Coupe No.IIhas just commenced. The lay out of the coupes is not sound, however the leasee being the same person it is enough that he is made to work the 4 coupes on the right in sequence and then take up working of the coupes on the left and work them in sequence.

598. The contractor pays the stipulated rate, only on the quantity of timber actually removed by him. So wasteful felling of trees takes place and many trees are left behind as useless which is against forest conservation. Thus the revenue realised is insignificant compared to the damage wrought to the forests, particularly when the tree species thus ruined being those required to protect and develop the Lion-tailed machaque. So there is a strong case for terminating this agreement soon and supplying the softwood from elsewhere.

ETA REEDS,

599. The right to callect and remove Eta reeds from the forests of Tirunelveli South Division has been leased out to Sun Paper Mills Limited, Cheranmahadevi for a period of 12 years from 1st April 1970 to 31st March 1981 stipulating certain conditions-vide Government Memo No. 63127/II/69 Agriculture Department dated 29th May 1970.

600. The rate fixed is Rs. 6 per tonne of green reeds for the first 3 years and the quantity removed during the peiod should not exceed 6000 tonnes and for any quantity in excess of this limit should be paid at Rs. 12 per tonne. The rate after the first 3 years will be determined by the Government after review. The District Forest Officer has suggested increase in rate now.

601. The Division is divided into 4 coupes and the Working period for each coupe is the calendar year and they are to be worked in sequence on a rotation of 4 years. First rotation has been completed and in the second rotation third coupe is to be worked in January 1976. The quantity of Eta reeds removed till October 1975 is 6928.8 tonnes and the revenue obtained is Rs. 41,572.88.

602. For the sake of convenience in working, the coupes are rearranged as follows.—

Coupe No. I—Kulasekaram Range.

Coupe No. II—Nanguneri Range (excluding area leased to Bombay-Burmah Trading Corporation).

Coupe No. III—Boothapandy Range.

Coupe No. IV—Azhagiapandiapuram Range.

603. The working of the first coupes in the revised pattern will commence in January 1977.

604. The following condition are to be observed in Working the reed coupes :

(*a*) Not mote than two thirds of the numbers of culms in a culm shall be cut ;

(*b*) No culm less than two years old shall be cut :

(*c*) No culm shall be uprooted but shall be cut at a height not exceeding twenty two centimetres from the ground level.

605. One of the important conditions in the agreement is that the produce should be brought to the sun Paper Mills site and weighted within 10 days of extraction and for delay beyond the stipulated period of 10 days penalty rate is indicated according to the period of delay. This condition should be strictly enforced with vigilance by the Forest Officer deputed for the purpose with the help of other staff in the division who can help in the matter by giving relevant informastion, lest revenue due should be lost.

CHECK POSTS.

606. At present there are checkposts in the following places :—

(1) Mecode ; (2) Kulasekaram ; (3) Kaliel; (4) Pechiparai ; (5) Arukani ; (6) Nettah ; (7) Thadikarankonam ; (8) Aramboly ; (9) Manimuthar.

607. The above checkposts are manned by 2 Forest Guards in each station except at Arukani Nettah and Manimuthar where there is only one Forest Guard. It is suggested that the checkpost at Nettah be abolished and the Forest Guard attached to the Arukani checkpost. One more Forest Guard has to be posted to Manimuthar checkpost. Normally for any such work as a checkpost which requires vigilance all the 24 hours, there should be 3 men. So, atleast in the case of Thad karankonam which requires constant vigil, 3 Forest Guards should be posted and this can be extended to such other stations as are considered important by the District Forest Officer when necessity is felt. It is also desirable to have permanent buildings in all these places and this should be undertaken in phased programme. Efforts should also be made to provide quarters adjacent to the checkpost for better performance of duties.

FIRE PROTECTION.

608. Of late Fire has become an annual feature causing vast damage to natural forests. In certain years plantations and timber depots also have been affected. Fire Protection measures as far as they relate to plantations have been prescribed under various working circles.

FIRE TRACING.

609. (i) *State Boundary.*—Fire Tracing will be done annually along the common boundary between Kerala and Tamilnadu. A permanent guideline in the form of an ungraded inspection path 3m. wide will be formed at an approximate distance of 1 chain from the common frontier. All inflammable growth on this path including grass should be uprooted. Every year in January this guideline will be roughly recleared and at the earliest possible, date, that is, as soon as the grass between the line and the frontier is dry enough it will be burnt.

610. (ii) *Roads and Paths.*—Fire Tracing should be done along roads and paths passing through deciduous forests or grass lands and frequented by people.

611. *Plantations and Timber Depots.*—The fire lines around the plantations and timber depots should be cleared in time and fire tracing done before the fire season begins. This should be enforced by frequent inspection by Range Officer and District Forest Officer. Many a fire can be attributed to the neglect of this work. Further the timber should not be allowed to lie at stump site but brought to the forest depot, without delay, before the end of January.

612. *Fire Patrol.*—Fire patrol will be continued to be employed to perambulate vulnerable areas and give information to the local staff and also assist in putting down the fire when noticed. The period of employment should be decided by the District Forest Officer according to the vulnerability of the area, and the drought period.

613. *Closure of Fire Burnt areas.*—Most of the fires are caused by graziers and collectors of minor forest produce. Such deliberate vandalsim, can be prevented only by removing the temptation to burn closing the burnt area immediately to grazing, before the new flesh of grass comesforth.

614. *FireFighting.*—FireFighting is successful only when tackled assoon as the fire occurred. So expediency of action is very important. In this the local staff should be vigilant and try to put down the fire with the help of villagers, graziers and Contractors' men. An investigation into the cause of fire shall be made, and the offender punished if it is a wilful burning. Fire occurrence report should be made in accordance with the standing orders. The subordinates who detected such offenders and secured their conviction should be rewarded.

615. *Control.*—The following control records will be maintained by the District Forest Officer.—

(*a*) *Fire Control Journal.*—A bound note book will be maintained which will contain complete information on the following points.—

(i) Areas closed to grazing annually on account of fire ;

(ii) Name and length of fire lines burnt with costs ;

(iii) The incidence of fire on each Range in the form of a tabular statement showing—

(*a*) Total areas of Range ;

(*b*) Date of Fire ;

(*c*) Area burnt ;

(*d*) Probable cause of fire ; and

(*e*) Percentage of area burnt to area protected ;

(iv) Observation of the District Forest Officer, adequacy or insufficiency of the fire-protection measures prescribed with reasons.

616. *Fire Maps.* —Fire Maps on a scale 1 inch =1 mile will be maintained separately for each Range. Every case of fire will be marked on the maps, serial numbers being given to the fires in the chronological order. The dates of fires will also be shown on the maps. All fire lines burnt will be indicated. One set of maps will be used for five successive years, the fires of each year being distinctively marked with different symbols or colours.

BOUNDARIES.

617. In Chapter I of Part I the condition of the boundaries is described in detail.

Kanyakumari District :

618. *State Boundary* :—The state boundary between Kanyakumari District and Kerala State in Kilamalai reserve has to be properly demarcated and kept clear and inspected year after year.

619. *Reserve Boundaries.* — None of reserves in Kanyakumari district has been clearly demarcated...The demarcation made in the beginning by a survey stone, reinforced at some places by cairns are often missing, with the result encroachments are numerous. A phased programme to demarcate the entire boundary by cairns and pillars was prescribed in the previous plan, but unfortunately has not been carried out.

620. *Interiot Boundaries.*—There are several enclosures inVeerapuli, Asambu and Mahendragiri forests. Besides registered holdings there are leased areas like Volia ela and areas placed at the disposal of Public Works Department and the Electricity Board. The boundaries of these land holdings and leasses are not demarcated on the ground with the result very valuable forests have been encroached upon and hacked and burnt.

621. Considering the appalling damage done in the last two decades it is high time that the entire forests are resurveyed and demarcated on the ground and in the process evict the encroachers and prepare maps for future check. This important work cannot be postponed any longer without jeopardizing the catchment area which will affect the irrigation and power. So special survey party comprising of an Assistant Conservator of Forests ; 2 Range Officers ; 2 Surveyors ; 4. Foresters ; 1 Draughtsman and 1 Tracer are put on the job to work along with the Assistnat Director of Survey and Land Records, Nagercoil and his staff.

622. As the survey progresses, permanent demarcation on the ground with Reserve Forests Pillars and Cairns should be made along the outer boundaries as well as around the enclosures.

623. *Tirunelveli District.*—All the reserves in Tirunelveli District are demarcated on the ground with pillars and cairns. But some of them are found dislodged and disarrayed.

624. Here also it is necessary to verify the boundaries with reference to various notifications of disreservation and addition and set-right the boundaries in the field and also correct the record copy of the reserves in the District Forest Office.

625. Enclosures within the reserve should also be similarly verified and demarcated on thel ground and clearly maked on the maps.

626. *General* : All the reserve boundaries exterior and interior should be kept free of all growth to awidth of 5 meteres periodocally clearing the lines un.er sanctioned estimateed All the boundar pillars should be white washed and numbered with tar annualiy, Dislodgh cairnsr should be made erect. Any change in the boundary from year to year wfs.t be marked in teecord copy maintained in District Forest Office after sanction by the competent authority.

BUILDINGS AND WELLS.

627. A list of buildings and wells in the division is given under Chapter V of Part I. All of them will be maintained in good condition. The surroundings of offices, Rest houses and Residential Quarters must be kept clean iof under growth as an anti-malarial measure and as a measure of fire protection.

628. Providing buildings for the subordinates in appropriate localities near their place of work will make for efficiency. But not much has been done in this direction perhaps on account of financial limitations. All the same it is wor th while to make sincere attempts and achieve this object of providing the quateters for all subordinates, especially for those engaged in executive work.

629. A start can be made by providing quarters wherever Government lands are available viz., Kulasekaranm ; Thadikarankonam ; Azhiagiapandiapuram ; Aramboly ; Nanguneri etc- All the subordinates whose headquarters are fixed at the above places can be provided with. quarters. Preference should be given to construct the checkpost at Thadikaran kombainam. Unless these Government lands are utilisec for this purpose they are likely to be encroached upon and lost.

630. *Renewa.l of Buildings* :—The Range Officers quarters and Range Office at Kulasekaram ; Azhagiapandiapuram ; Vadaseri and Nanguneri are very old, uncomfortable and tend to fall in disrepair. So these should be remodelle very soon. Further all the existing buildings which have not beeo electrified should be given power supply. Likewise all other old buildings in the division should be given a special repair.

631. *Rest houses* :The P.W.D. Rest house at Thadikarankonam may profitably be taken over by the Forest Department and converted into a convenient Rest house as invariably much difficulty is experienced in getting accommodation for the camping officers, at Nagercoil. The Keeriparai Rest house under Rubber Circle is not centrallv located apart from the fact it is far interior to command any conveniences. The location Thadikarankonam is ideal for inspection of the entireforets in Kanyakumari district.

632. In the previous plan a rest house had been suggested to be constructed at Perunchani dam site not been built.

633. The Forest Rest house at Sengaltheri should be imrpoved and modern amenities provided as Sengaltheri is to gain importance because of the formation of the sanctuary and easier approach made possible by formation of the road to Sengaltheri from Mudalaruppan.

634. *Wells.* The existing wells will be maintained in a state of good repairs so that the water from them can be used at all times A new well may be du at Thadikarankonan to provide water supply to subordinates for whom the quarters has been proposed.

ROADS.

635. All roads and bridle paths and bridges whether used or not should be maintained in good condition. During the annual repairs to roads wherever possible the progressive improvement in width and surface should be aimed at in order to allow cars and lorries. Emphasis has tobe laid onthe proper drainages as most ofour roads have become thoroughly useless because of neglect of this aspect, allowing water to flow along the road. So drainage is very important.

636. *Sengaltheri Road.* —The existing road from Kalakad to Sivanaperi and Sivanaperi to Mudalaruppan have been badly neglected and not motorable now. But the engineering branch of the Forest department is forming a pucca road from Mudal ruppan to Sengatheri. This road will be of no use unless the road Kalakad to Mudalaruppan is improved In this connection it is suggestec that the road from Kalakad to the boundary of Kalakad Reserved Forest be handed over to the Kalakad Panchayat for improvement and further maintenance. The road lying within Reserved Forests till Mudalaruupan should be immediately repaired, to make it alteast jeepable, for the present.

637. The bridle path from Sengaltheri to Neterikal is overgrown with weeds and grass. It is essential that this bridle path is always kept clear, to facilitates tourists and naturalists to visit the Sanctuary.

638. The foot path connecting Sengaltheri to Kakachi should be improved and converted to bridle path to facilitate naturalists to reach Sengaltheri from Kakachi.

Balamore-Muthukuzhivayal Road.

639. The road from Balamore to Muthukuzhivayal which was once motorable is not useable now as part of the road is submergible. A diversion and improvement to this road will connect Nagercoil and Kuttalam via. Kallidaikurichi. This road will facilitate inspection by the Forest Officers in addition to encouraging tourist traffic to visit the Kalakad Sanctuary.

640. *Asambu District Trace* : It will be worthwhile to improve this road so that exploitation in Asambu Forest is made easy when orders are received on the proposal to exploit royal trees in Asambu Forest.

RAINGUAGES.

641. No rainguages have been maintained in this division inspite of prescription in the former plan to establish new rainguages at Kurumalai, Kachanavilai, Muthur and Gangaikondan.

642. It is essential to instal rainguages in different rainfall zones of the division. The information thus collected will be a guiding factor for prescribing planting operations suited to the localities.

643. The maintenance and protection of rainguages should be entrusted to the nearest executive staff. Monthly reports should be got from them and entered in a register in the District Forest Office.

WILDLIFE.

644. *General.*—Prohibition of shooting over the entire division from 1.4.68 has helped the wildlife. The population has increased and the movements are to a certain extent free in the hill forests of Tirunelveli District.

WILDLIFE ASSOCIATION.

645. The wildlife association functioning at Palayamkottai helped in bringing about some awareness among the public and also in rendering some assistance to the Department by giving information on poaching and rewarding deserving subordinates. Though this association his supposed to cover Kanyakumari District also its activities are mainly confined to Tirunelveli District. So a similar association is desirable for Kanyakumari District also.

646. *Sanctuary.*—Singampatty Ex-Zamin forests has been made a Tiger Sanctuary. Recently in G.O. Ms. No. 183, Forests and Fisheries, dated 6th March 1976 the entire Kalakad reserve forest had been constituted into Sanctuary, mainly to develop it into habitat for liontailed macaque.

647. There are three Bird Sanctuaries viz., (1) Gangaikondan Tank, (2) Koonthakulam and (3) Moonradaippu. The last two are the places where the birds nest called Tree Sanctuaries. Water Birds are converging in large numbers in a number of other tanks also. Out of them the following tanks are prominent and they can be declared as ‘ Water Bird Refuges ’ (1) Vijayanarayanam and (2) Karungulam.

648. *Zoo.*—In TamilNadu the only Zoo is at Madras and it would be interesting and profitable to develop a Zoo in the Southern part of the state. There is a proposal from the wildlife association to develop a Zoo in Gangaikondan Reserve Forests in Sankaranagar which is on the National Highways about 10 km. from Tirunelveli. Keeping the existing growth intact animals can be introduced in stages and a good Zoo can be formed with the natural habitant. For this purpose, a portion of the Gangaikondan Reserve Forest is set apart and leased out to the wildlife Association.

649. *Black Buck.*—Strict enforcement of protection is indicated to prevent the extermination of Black Buck from Vallanad Reserved Forest. It is also suggested to introduce Black Buck in lower slopes of Kalakad Reserved Forest.

LIVESTOCK.

650. There are at present seven elephants in this division. The elephant camp is at Kalikesam in Azhapandiapuram Range. The elephants are brought to this division mainly to undertake elephant capturing operations in Kanniyakumari district. Till now there has been no success in capturing elephants however, they are utilised for carrying out departmental works. The elephant capturing operatins will be continued as at present. The pit method will be employed. The number of pits to be covered and their location will be decided annually by the District Forest Officer.

651. Construction of semi-permanent sheds for the elephantsmen is essential. Quarters for the Elephant Forester and a provisions shed-*cum*-kitchen for elephants is also necessary. The elephants are now tethered at the camp on open ground and the site often gets slippery and nasty due to dung and urine particularly during the rainy season. It is false economy to allow elephants to stand perpetually on ground amidst urine and filth. A cement concrete flooring raised above the ground level with a thatch roofing (never of corrugated iron or asbestos, as these tend to to get hot during the day) sufficiently high enough to allow an elephant loaded with fodder to enter is suggested. There should be no walls and the thatch roof should extend sufficciently to keep off the afternoon sun.

ABANDONED ESTATES.

652. An area of 5,400 acres comprising of 45 Abandoned Estates was added to the Veerapuli Reserve by purchase or otherwise (as per Register of Reserve) towards the end of 1,087 M.E. (1912). They are still shown in revenue accounts as Forest Porambokes as no statutory notification under Forest Act declaring these areas as Reserve Forests was published. Thiru S. A. Rahmatullah in his plan has pointed out this and indicated that action should be taken to notify all the above estates except those submerged in Kodayar Reservoir into Reserve Forests but nothing seems to have been done.

ELECTRICITY BOARD.

653. Large areas are occupied by the Electricity Board at Upper Kodayar and Lower Kodayar, but they are not demarcated on the ground and no proper sketches are available. Further lease amounts due from the Electricity Board have not been realised for a long period which has accumulated to more than Rs. 3,00,000. It is utmost urgent to get sketches of such areas occupied by the Electricity Board and mark them in maps and as well demarcate on the ground those areas which are permanently required by them and also take steps to realise the outstanding dues.

RESERVATION OF EX-ZAMIN FORESTS AND OTHER UNRESERVES.

654. The Ex-Zamin Forest taken over by the Forest Department even as early as 1952 and 1954 in Tirunelveli District are yet to be constituted into Reserved Forests. Even section 4 notification have not been issued. in Kanyakumari district the Asambu Proposed Reserves has yet to be notified under section 16 inspite of the fact, section 4 notification equivalent, was issued in 1908 itself. Pending action on this important aspect valuable forests are being destroyed and at the same time exploitation by the department has not been possible. Further, action has to be taken to constitute into Reserved Forests, Kottakarai, Thodalikadu, Kanipatti lands, Thadikarankonam plot and the P.W.D. Rest House. In the case of Thodalikadu, Section 4 Notification alone has been issued in 1975. In Rahmatullah's Plan, these suggestion have been made but progress has not been achieved.

CONTROL.

655. The control records and maps which have to be maintained in the District Forest Office have been duly dealt with under the reespective working circles. The posting and maintenance of control records and maps is a matter of greater importance. They should be written soon after the close of each financial year and a copy of the entries made will be submitted to the Conservator of Forests and the control maps should be shown to him at the time of office inspection.

656. *Control Book.*—This record will show all the operations actually carried out under each working circle, as against the prescriptions of the Working Plan as well as those neither prescribed nor suggested but are carried out.

Sample control forms for each working circle are given in the appendix.

657. *Record of Works.*—This is a brief record to be written up annually of all works carried out under the prescriptions or recommendations of the working plan, as well as such measures as are neither prescribed nor suggested but are carried out.

658. *Register of deviations.*— This is a record showing every case of deviation from the prescriptions of the working plan, the need for the deviation and the authority by whom it was sanctioned

659. *Control Journal.*— The object of the journal is to place on record, important observations and comments of the District Forest Officers on all aspects of the divisional management. Statistics of yield and revenue which are available inthe control forms should not be repeated here. The headings under which the journal isto be written is given in the appendix. Additional headings may be added by the District Forest Officer while writing up the journal. The journal will be written personally by the District Forest Officer at the end of each year. The journal will be maintained in one bound note book allotting suitable number of pages for each heading.

660. A summary of annual revenue and expenditure in a form to facilitate comparison with the financial forecast of this plan will also be recorded every year in the form given in the appendix.

661. *Control Maps.*— TheControl Maps will be shown on a 4"—1 mile scale, the areas proposed for working every yaer, the area actually marked, areas annually regenerated under plan prescriptions and even outside the plan prescriptions with the name of the species planted and their extent.

PLANTATION AND NURSERY JOURNALS.

662. In additon tothe control forms prescribed under the previous section, plantation and nursery journals will be maintained wherever artificial regeneration operations are involved.

663. *Plantation journal.*— A plantation journal will be maintained for each plantation showing its location, area sketch of the plantation of a scale of 16 inches to a mile the nature of previous growth, the revenue obtained if any by clearing the growth, the details and cost of formation of the plantation and further history like thinnings, etc .

664. *Nursery journal.*— A nursery ledger or journal will be maintained for each year's nursery its location and number, size of beds, species sown, seed-origin, date of sowing, nursery technique adopted watering regime, cost of maintenance, etc.

665. Both the plantation and nursery journals will be maintained personally by the Range Officer. Inpecting Officers will note their remarks in these journals for action to be followed up by the Range Officer. Copies of these jounals will be maintained at the District Forest Officer also.

CHAPTER XII– ESTABLISHMENT AND LABOUR

SECTION 1– ESTABLISHMENT.

666. *Present position.*—The establishment of this division and their distribution to different ranges as on 1st January 1975 is given in Chapter IV of part I.

667. *Formation of Boothapandi Range.*—Since the formation of Boothapandy Range, there has been confusion on the jurisdiction and allotment of beats and sections among the three ranges in Kanyakumari district. Still the confusion prevails. The latest proposals of the Chief Conservator of Forests submitted in his No. 60327/74-G2 dated 30thAugust 1975 will be given effect after approval by the Government.

668. The headquarters of Boothapandi Range can be at Aramboly which is centrally situated considering the range jurisdiction. For that the Government land at Aramboly where the present subordinate quarters are located can be utilised for construction of Range Office and also quarters for the Range Officer.

669. *Additional staff.*– The staff required for carrying out certain prescriptions suggested in this Working Plan viz., (1) setting right the confused state in the forest boundaries in Kanyakumari district; (ii) demarcating the cardamom lease areas; (iii) raising Manimuthar Canal Bank Plantations; (iv) effective manning of check-posts etc. are given under the respective headings.

670. *Bifurcation of the division.*– It is suggested that in the interest of management of valuable forest in this division' the division is bifurcated into two, one with headquarters at Palayamkottai called Tirunelveli South Division to manage the existing portion of the forests in Tirunelveli district and the other at Nagercoil called Nagarcoil Division to manage the forests inKanyakumari district.The valid arguments for this suggestion are given in Chapter IV of Part I and the extra office staff required also is indicated there.

SECTION 2– LABOUR.

671. Labour though available in villages, cannot be easily drawn for our departmental regeneration works. They except higher wages than those prevailing in the villages, which has gone up very much in recent years or they except supplementing their wages with some forest produce like faggot wood. Even their labour is scarce during the period when regeneration operations are undertaken as it coincides with the season for agricultural operations. This difficulty is overcome when kumri is resorted to as in some places in Kanyakumari district. But Kumridars are not forthcoming in Tirunelveli district.

672. Much difficulty is experienced in getting labour at Upper Kodayar and no headway has been made in regeneration operations here because of labour shortage only. The labour will have to be paid their wages as in the Electricity Board if progress has to be achieved in planting up Upper Kodayar.

673. So, the forest schedule of rates should be judiciously fixed taking into consideration the prevalent wages in private and other sister departments and in certain cases like Upper Kodayar increased rates should be given.

CHAPTER XIII.—FINANCIAL FORECAST AND COST OF THE WORKING PLAN

SECTION 1—FINANCIAL FORECAST.

674. The estimated revenue and expenditure under each working circle for the period of this plan are given in the following statement :—

1. *The Teak Working Circle.*

Year.	*Revenue in rupees.*	*Expenditure in rupees.*
1976-77	94,300	40,300
1977-78	57,000	19,100
1978-79	80,200	26,500
1979-80	1,04,000	33,500
1980-81	81,400	27,800
1981-82	71,000	20,500
1982-83	74,000	24,000
1983-84	47,000	15,700
1984-85	94,000	31,000
1985-86	43,000	14,200

2. *The Softwood Working Circle.*

1976-77	5,76,000	51,370
1977-78	7,58,500	63,960
1978-79	11,81,500	1,33,260
1979-80	12,57,100	99,980
1980-81	13,16,500	1,20,530
1981-82	13,16,000	1,16,640
1982-83	13,01,000	1,17,760
1983-84	11,13,200	1,15,000
1984-85	16,66,000	1,09,320
1985-86	20,02,000	1,30,500

3. *The Fuel Working Circle.*

1976-77	39,000	200
1977-78	40,000	200
1978-79	38,000	200
1979-80	38,000	200
1980-81	38,000	200
1981-82	40,000	200
1982-83	40,000	200
1983-84	40,000	200
1984-85	39,000	200
1985-86	37,000	200

4. *Reafforestation Working Circle.*

1976-77	NIL.	40,000
1977-78	NIL.	40,000
1978-79	NIL.	40,000
1979-80	NIL.	40,000
1980-81	NIL.	40,000
1981-82	NIL	40,000
1982-83	NIL.	40,000
1983-84	NIL.	40,000
1984-85	NIL.	40,000
1985-86	NIL.	40,000

5. *The Teri Forest Regenetation Working Circle.*

1976-77	NIL.	72,100
1977-78	NIL.	72,800
1978-79	NIL.	76,300
1979-80	NIL.	72,800
1980-81	NIL.	71,400
1981-82	NIL.	68,600
1982-83	NIL.	66,500
1983-84	NIL.	73,500
1984-85	NIL.	73,500
1985-86	NIL.	75,600

6. *The Bamboo Working Circle.*

1976-77	NIL.	5,000
1977-78	NIL.	5,000
1978-79	30,000	5,000
1979-80	30,000	5,000
1980-81	30,000	5,000
1981-82	30,000	NIL.
1982-83	30,000	NIL.
1983-84	30,000	NIL.
1984-85	30,000	NIL.
1985-86	30,000	NIL.

7. *The Grazing Working Circle.*—

An annual revenue of Rs. 30,000 is expected.

8. *The Minor Forest Produce Working Circle.*—

An annual revenue of Rs. 1,00,000 is expected.

9. *Miscellaneous Regulations.*

(i) *Farm Forestry.*—

1976-77	40,000	30,000
1977-78	28,000	36,000
1978-79	1,07,000	36,000
1979-80	1,33,500	1,20,000
1980-81	47,500	17,000
1981-82	32,000	36,000
1982-83	39,000	37,500
1983-84	96,000	42,000
1984-85	87,500	78,000
1985-86	50,000	1,05,000

(ii) *River and Canal Bank Plantations.*—

Revenue.—Only in 1976-77 a revenue of Rs. 4,000 can be realise from sale of material obtained in thinnings.

Expenditure.—An expenditure of Rs. 3,000 is anticipated in raising plantations.

(iii) *Introduction of Pines.*—Annually an expenditure of Rs. 10,000 is expected. No revenue is anticipated.

(iv) *Kandamparai Teak Plantations.*—A lumpsum expenditure of Rs. 10,000 is anticipated in cleaning and thinning operations and a revenue of Rs. 1,000 can be obtained from thinned materials.

(v) *Kani Settlements.*—

1976-77	2,00,000	40,000
1977-78	2,50,000	50,000
1978-79	1,50,000	30,000
1979-80	1,80,000	36,000

(vi) *Cardamom Leases*.—Annually a Revenue of Rs. 12,000 is expected.

(vii) *Chip Board*:—Annually a revenue of Rs. 500 is expected.

(viii) *Eta reeds* :—Annually a revenue of Rs. 7,500 is expected.

(xi) *Fire Protection*:—Annually an expenditure of Rs. 5000 is anticipated.

(x) *Boundaries* :—Annually an expenditure Rs. 5,000 is anticipated.

(xi) *Building and Wells* :—Annually an expenditure of Rs. 1,00,000 is anticipated from 1977-78.

(xii) *Roads* :—Annually an expenditure of Rs. 5,000 is anticipated.

(xiii) *Livestock*:—

Year. (1)	*Revenue (in rupees).* (2)	*Expenditure (in rupees).* (3)
Annual	1,50,000	1,20,000

(xiv) *Electricity Board*:—Annually a revenue of Rs. 36,000 is expected.

(xv) *Bombay-Burmah Trading Corporation*:—Annually a revenue of Rs. 14,235 is expected.

(xvi) *India Cements*:—Annually a revenue of Rs. 2,00,000 is expected.

(xvii) '*C*' *Fees*:—Annually a revenue of Rs. 50,000 is expected.

(xviii) *Establishment*:—Annually an expenditure of Rs. 9,00,000 is anticipated.

10. *Abstract of the Forecast.*

The total revenue and expenditure for the whole division for each year is estimated to be as follows nearest to Rs. 1,000.

Year. (1)	*Revenue* (2)	*Expenditure* *(Rupees in Lakhs).* (3)	*Surplus* (4)
1976—77	15.54	13.37	2.17
1977—78	17.34	14.35	2.99
1978—79	21.87	14.95	6.92
1979—80	23.80	15.56	8.24
1980—81	21.14	15.30	5.84
1981—82	20.90	14.30	6.60
1982—83	20.84	14.34	6.50
1983—84	19.27	14.35	4.92
1984—85	25.17	14.80	10.37
1985—86	27.63	15.14	12.49

This plan is development oriented attempting to (i) replace the existing scrub jungle in Tirunelveli district with more useful productive species on a large scale;

(ii) improve the existing poor plantations of Teak and Soft wood species; (iii) provide more housing facilities for the subordinates and therefore high expenditure is inevitable. At the same time, valuable forests which give high revenue initially when clearfelled for conversion into plantations much restricted so, the revenue is not high. Thus, the surplus revenue each year is not much. However successful implementation of the plan will bring about very good revenue in later years. (The revenue to be obtained by sale of present stock of timber in the Government Depots is excluded in this statement of forecast of revenue and expenditure).

SECTION 2—COST OF THE WORKING PLAN.

675. *Cost of the Working Plan.*—The expenditure on the preparation of this Working Plan is as detailed below:—

Particulars. (1)	*Expenditure. incurred.* (2)
	RS. P.
Pay of Officers	25,066.13
Pay of Establishment	1,04,594.39
Dearness Allowance	29,491.48
Other Compensatory Allowance	15,623.45
Travelling Allowance including Fixed Travelling Allowance	23,473.86
Purchase of Jeep and its maintenance	43,976.27
Contingencies	19,340.71
Total	2,61,566.29

676. The working Plan Officer in the category of a Deputy Conservator of Forests, Two Rangers, Six Foresters, One Draughtsman Grade II, One Assistant, One Steno-typist, One Jeep Driver and Four Peons formed the establishment of this division. The revision of the Plan was commenced on 1st August 1973 and completed on 31st December 1975.

CHAPTER XIV—SUMMARY OF PRESCRIPTIONS.

CHAPTER-I—BASIS OF PROPOSALS.

PARAGRAPHS

Scope :—The Working Plan covers—Tirunelveli South Forest Division as constituted from 1956; but excludes the area coming under Rubber Circle.

Objects of Managements :—The objects of management are briefly:— 303

(i) to conserve and improve the forests and obtain indirect benefits .. ..

(ii) to exploit the timber; fuel, bamboos, reeds, pasture and Minor Forest Produce in conformity with silvicultural principles.

(iii) to supply the local population and the forest based industries their requirements of Forests produce to the extent possible.

(iv) to raise valuable plantations of softwood, fuel and other useful species and enhance the value of the existing forests.

(v) to augment the forest resources by creating forests along river banks tank beds and porambokes.

(vi) to protect and develop the Wildlife sanctuary and provide facilities for their improvement.

(vii) to provide at least minimum amenities for the subordinate staff of the Division.

Working Circles :—The following Working Circles have been constituted.

	Extent in hectares.
(i) The Teak Working Circle	2136.7
(ii) The Softwood Working Circle	2324.7
(iii) The Fuel Working Circle	3951.8
(iv) The Reafforestation Working Circle	2159.7
(v) The Teri Forest Regeneration Working Circle	1560.8
(vi) The Bamboo Working Circle	
(vii) The Grazing Working Circle	
(viii) The Minor Forest Produce Working Circle	
(ix) The Protection Working Circle.	

Period of the Working Plan.—The Working Plan will be in force for a period of 10 years from 1st April 1976 to 31st March 1986. For any eventually of continuance of the plan prescriptions and suggestions are given for the succeeding 5 years. 315

CHAPTER-II —THE TEAK WORKING CIRCLE.

	Paragraphs.
Objects of Management : The object of the Working Circle is just to manage profitably the existing Teak Plantations as no planting is proposed during this plan period.	316
General Constitution : The Working Circle consists of all the existing Teak Plantations in Kanniyakumari district.	
Area : The area of the Working Circle is 2136.7 hectares	**318**
Character of the Vegetation : The Teak Plantations excepting a few are not as promising as they should be considering locality factors.	319
Division of the area : –The Working Circle is divided into 2 felling services viz. Kulasekaram and Azhagiapandiapuram. The plantations in Kulasekaram Range will be called Kulasekaram Series and the plantations in Azhagiapandiapuram and Boothapandi Ranges as Azhagiapandiapuram Series.	320
Silvicultural System : The Silvicultural System followed was clearfelling followed by the artificial regeneration.	322
Choice of Species : Teak only was raised	323
Rotation : The Rotation is fixed as 80 years tentatively	324
Regulation of yield : No clearfelling is contemplated during this plan period and the yield only from thinnings.	325
Silvicultural Regulations : Tending and thinning operations will be carried out as each plantations needs.	326
Tending : Tending consisting of clean weeding cutting of climbers, uprootal of Lantana and Bamboos and cutting back of all damaged Teak Saplings will be carried out in the neglected plantations.	327
Schedule : The plantations to be tended and the year of tending are given	328
Thinning : Thinning cycle will be 6, 12, 20, 30 and 40, the first will be mechanical and the rest silvicultural. The degree of thinning will be "C" grade and the espacement after each thinning is given.	329
Marking rules for thinning : The relevant marking rules for thinning are given ..	330
Thinning Programme : A statement showing the 331 plantations to be thinned in each year is given.	331
Exploitation of thinned produce : The thinned produce will be classified as given in Chapter IV of Part-I and trees above 90 cems. girth will be treated as logs and sent to the Nagercoil Timber Depot for sale.	332 and 333
Other Regulations : Erection of plantation board, formation of inspection paths and maintenance, fire protection measures and the records to be maintained as control are given.	334 to 336

CHAPTER III—THE SOFTWOOD WORKING CIRCLE.

	Paragraphs.
Object of Management : The object is to meet the needs to Match Factories and requirements of fisherman for catamarans.	338
General Constitution : The Working Circle includes all the existing Softwood Plantations in Kanyakumari district and areas considered suitable for planting with softwood species.	330
Area : The area of the Working Circle is 2,385.3 hectares	
Charactor of the Vegetation : The area selected for conversion mostly contains secondary growth in the moist deciduous Type.	340
Division of the area : The Working Circle willconsist of two planting series, viz Kulasekaram and Azhagiapandiapuram. All the existing plantations ond future areas in Kulasekaram Range will constitute Kulasekaram Series and those in Azhagiapandiapuram and Boothapandi Ranges will constitute Azhagiapandiapuram series.	341
Analysis of the Crop: A list of existing plantations is given:Most of the plantations have not fared well due to neclect in attending to tending and thinning required and the resulted suppression by weeds and congestion in the crop itself aggrevated by yearly fare.	342 and 343
Silvicultural System : The Silvicultural System will be clear felling followed by concentrated, artificial regeneration with softwood species.	344
Rotation : The rotation will be 10 years for Albizzia falcata and 35 years for Bombax ceiba.	345
Regulation of yield : The yield will be regulated by area.	346
Demarcation and survey : The annual coupe will be surveyed and demarcated well in advance so as to allow sufficient time for departmental extraction of timber and for clear felling the standing growth before the area is taken for planting.	347
Marking for felling : All trees of exploitable species will be marked and enumerated. The marking should be completed ordinarily 2 years before the scheduled month of planting. The marking should be checked by the District Forest Officer spread over the entire area with 10 per cent as minimum. A few scattered large size trees will be retained to provide facilities for nesting of birds.	348 and 349
Disposal of tree growth : The felling conversion and draffing to forest depots will be done departmentally and transport from forest depot to sale depot at Nagercoil may be through the agency of contractors.	350
Extraction Scheme : An extract on scheme should be drawn by the Range Officer and got approved by the District Forest Officer.	351
Felling : The felling should be with saw and proceed systematically from one end to the other.	352

Logging and Dressing: Logging and Dressing should be done to get the maximum avoiding wastage. Frequent check by District Forest Officer is desirable. Dragging by elephant will be done by using sister hooks. 353

Numbering of Log: The existing procedure will be follows: 354

Classification: The present system on clasification will be followed: 355

Extraction and Transport: The Log will be draffed to the Forest Depots which should be specialily fire protected and immediately transpored to the Depot at Nagercoil. 356

Clearfelling the standing growth: The left over growth will be auctioned with voidah 1st May to 31st December excluding unplantable rocky portions, the rest of the area should be clearfelled by the contractor, but materials below 40 cms. will be left behind for burning. 357

Tabular Statement of Fellings: A Tabular Statement of fellings is given: 358

Regulation of Regeneration Operations: The planting area should be burnt evenly taking precautions against ecape of fire. Aligning and staking at 3m x 3m/espacement should be completed by end of March. 30cms. cube pits will be done and allowed to weather for a month and refilled container of Albizzia falcata will be planted commencing outset of south-West mon soon. 359 to 361

Kumri : Kumri should not be allowed for more than 2 crops or 1 year which-ever is earlier. Planting should be done departmentally. Tapioca planting should not be allowed to precede forest species. Contour planting of Tapioca should be enforced. Vigilance should be kept to see that the forest crop does not suffer because of Kumri crop. 362

Nursery : Seeds should be collected from good straight grown trees of clean bole The nursery site should be locacted close to the Regeneration Area. The container plants should be not less than 6 months old and at least 30 cms. in height. 363 to 365

Subsidiary Silvicultural Operations : 366

Casualties will be replaced as and when they occur during the first month itself and in the second year as soon as South-west monsoon sets in. Four weedings and soil working are Prescribed for non Kumri area in the first year and two weedings in the second year.A Silvicultural thinning is prescribed in the fifth year when half the number will be removed. Trees to be thinned should be numbred and sold as standing trees. 370

Programme of thining: A Tabular Statement of thinning to be done is given. 371

Harvesting : The final felling will be in the tenth year and the selling schedule is given. 372 and 373

Replanting : The plantations clearfelled will be replanted in the year following felling. 374

Salvaging the existing plantations : Tending Operations comprising of clearing unwanted growths and cutting climbers will be carried out in the poor plantations. A tabular statement is given. Tending oprations is not necessary to pure Albizza falcatt a plantations. In mixed plantations the District Forest Officer will use his discretion. 375 to 377

Replanting of failed pits : After tending the failed compact blocks will be replanted under Kumri method. 378

Other Regulations : The plantation will be closed for grazing for the first 5 years. A plantation Board will be erected and renewed every year. Inspection path 2 m. wide will be formed fire lines 5m. .wide exterior and 3.5 m. interior will be formed and prescribed. 379 to 382

383

Control : Control records are prescribed.

CHAPTER IV—THE FUEL WORKING CIRCLE.

PARAGRAPHS

Object of management—The object of this Working Circle is to supply maximum quantity of fuel and also some small timber 384

General Constiutions—The Working Circles includes the lower slopes of Mahendragiri Reserved Forest and Singampatti Ex-Zamin Forest. 385

Area— 3951.8 ha. 386

Character of Vegetation—The Vegetation is of Southern Tropical Dry Deciduous Type 387

Division of the area—The working Circle is divided into 4 Felling Series—Panagudi Kilmanimuthar, Vadagarai and Kalakad, the last two will not be worked being situated in the sanctuary 388

Analysis and Valuation of the Crop—Detailed enumeration or valuation surveys were not done 389

Silvicultural System—The Silvicultural System will be 'Coppice with reserves' Artificial Regeneration will be done where possible 390

Rotation—The rotation will be 40 years 391

Regulation of the yield—The yield will be regulated by area 392

Method of executing fellings—The annual coupe will be laid according to the map by cutting lines 2m. wide. The trees on the outer periphery will be ring marked and serially numbered. Reserved species within the coupe will be marked and numbered serially and will not be felled. Coupe will be divided into strips of not more than 10 ha. by lines 1m. wide. The cut materials will belong to the contractor. Survey and enumeration to be checked by the District Forest Officer in not less than 3 coupe in each range. The coupe will be worked through agency of contractors.The lease period will be from 1st April with varying periods of voidah according to the extent of coupe. Arrear coupe will be sold in the subsequent year .. 393–405

Work should be done strip by strip. The reserved trees will not be felled, also the seedlings and saplings from natural regeneration. The Contators will clearelled all shrubs, trees and climbers even if not required by him. No tree growth within 20 m. on either side of perrenial or semi-perennial stream will be felled. Cutting should be done clean without injuring bark within 15 cm. from the ground level, Bamboos within the coupe can be felled by the contractor. The firewood should be stacked and stem removed .. ..

Timber will be hammer marked before removal. The contractor should supply fuel and small timber to the ryots for domestic consumption at the rates to be fixed by the District Forest Officer in consultation with the Collector. Similarly brushwood will be supplied to the members of the Jaggery-Co-operative Society .. ..

Tabular Statement of Fellings—A tabular statement is given indicating the coupes to be worked in the next 15 years 406–407

Regeneration—After working of the coupes the District Forest Officer will inspect and regenerate such of those areas suitable for regeneration, under reafforestation technique 408

Other Regulations—The four salient corners of each coupe will be demarcated by cut stone slabs showing the year of working and coupe number. Felled coupe will be closed to grazing for a period of 5 years. 409–412

A statement of forest produce—Forest produce removed will be given by the contractor before 10th of each month.

Control—The control records to be maintained are indicated 413-414

CHAPTER—V—THE REAFFORESTATION WORKING CIRCLE.

PARAGRAPH

Object of management —The object of management is to rehabilitate the ex-panchayat forests badly managed and also those areas in the Reserved Forest wherein exploitation has been done under Fule Working Circle 415-416

Adoption of different technique choice of hardy species and effective protection are stressed for success

General Constitutinn—The working Circle includes the plain forest in Tirunelveli Range and eastern slopes of the forest in Nanguneri Range considered suitable for regeneration 417

Area—2159.7 ha 418

Character of Vegatation–The types of forest are the Southern Tropical Thorns Forests and Dry Deciduous Forests 419

Division of the area There will be one felling series called Tirunelveli Series covering Tirunelveli and Nanguneri Ranges 420

Analysis and valuatin of the Crop—Stock mapping was done to select areas suitable for regeration and no valuation survey was undertaken 421—422

Silvicultural System—The Silvicultural System will be artificially restock these degraded areas with suitable species supplementing whatever remnants of the earlier attemps on regeneration are found 423

Choice of species—The main species will be Acacia planifrons and the other species will be Hardwickia binata, Albizzia lebbeck Pterocarpus santalinus etc.,Divi-Divi also will be planted. 424

Rotation—The rotation will be 15 years for Acacia planifrons and for the other species 30 years 425

Annual planting area—Nearly 200 ha are prescribed for planting annually so that all suitable areas are planted up soon taking advantage of the functioning of a special division at Palayamkottai. Much stress is laid on proper execution of work strictly according to the prescriptions last more harm than good is caused by clear-felling the existing growth 427

Statement of Planting—A detailed statement of the areas to be planted annually is given 428

Regulation of Regeneration Operations—The Annual Regeneration area will be surveyed and demarcated one year in advance of planting by cut lines 2 m wide Trees of useful species with girth more than 15 cm or more than 2 m top height will be enumerated and retained as reserves. Leaving the reserves the rest of the growth will be clearfelled, uprooted, and removed to the peripheri and used as fence. Ploughing should be done along the contour atleae 20 cm. deep with tractor or country plough. Aligning and stacking will be done at 3×3m espcement. Pits 30 cm. cube will be dug and the dug out soil allowed to weather for a month in August-September. The weathered soild will be put back and a saucer 1m wlila will be fored around each pit. A half moon shape bund will be formed on the sloping side to store water. The above preliminary operations should be completed by the end of September. Planting with container plants 6 to 9 months old 50 cms.height will be closed as soon as North-East monsoon sets in and completed. completed very quick. Kumri crop of Vinca rose can be encouraged but not at the cost of the principal species 429-430

Nursery—Acacia planifrons seeds should be collected from sound well grown trees. The nursery should be located near the planting site. The Nursery operations should start in January so that each container has a seedling not less than 50 cms in height 439-441

PARAGRAPHS

Subsidiary Silvicutlural Operations—Casualities should be replaced as and when they occur by going over the area frequently during the first month itself so tht full stocking is achived in the first year. Casualties if any will be replaced in the second year during the early monsoon period. Weeding and soil working done twice in the first year, first a month after planting and the second towards the end of monsoon. In the second year also two weedings combined with soil working will be done, first in October-along with replacement of casualties and the second in December .. 442-443

Other Regulatinos : Plantation Boards will be erected and renewed every year. The areas regenerated will be effectively fenced and closed to grazing for a period of 5 years. Mazdoors can be engaged for protection. On both sides the road passing through regeneration areas avenue trees will be raised. Inspection paths should be laid even while aligning and before pitting by dividing the area into approximately 10 ha. bits to facilitate movement of Jeeps even to the extreme-end. 444 to 448

Control :—The control records to be maintained are indicated .. .. 449 tc 440

CHAPTER VI.

THE TERI FOREST REGENERATION WORKING CIRCLE.

	PARAGRAPH.
Object of management.—The object of the Working Circle is to afforest the sandy wastes and thereby arrest the wind erosion and stabilised the shifting sand.	451
General Constitution.—The Working Circle covers the entire Kudiraimozhi Teri Reserved Forest and Sathankulam Reserved Land.	452
Area : 1,560.8 Ha.	453
Character of the Vegetation .—The description of the character of the vegetation is given in Chapter II of Part I.A list of plnatations raised till 1958 is given in Chapter V of Part I.	454
Analysis and valuation of the crop.— No exploitation is contemplated, so valuation was not done.	455
Stock mapping. —Ocular stook mapping was done based on which future planting is prescribed.	456
Method of treatment.—The silvicultural system will be artificial regeneration of the open areas with sutiable hardy species. The adverse factor of the soil with poor nutrients and little capacity to retain moisture, the poor rainfall for a short period followed by a long drought and the fierce desiccating wind should be borne in mind and planting done according to time schedule.	457 to 459
Choice of species.—The three main species chosen are Acacia planifrons, Anacardium occidentale and Borassus flabellifer.	460
Rotation.—No exploitation is contempleted so the question of rotation does not arise.	461
Annual planting area .The annual planting area will be about 20 ha. in each bit.	462
Tabular statement of planting .—A tabular statment of planting for next 15 years is given and planting areas are marked in detailed map.	463 and 464
Survey and demarcation.—Demarcation should be done on the ground by concrete slabs in corners, along the periphery 5 chains apart concrete pillars will be erected.	465
Preparation of planting site.—Alignment at an espacement of 3m×3m immediately followed by digging 30 cm ³ pits should be completed by 1st October. Fencing materilas should also be got ready.	466
Planting.—As soon as rains start, container plants of Odai and Cashew will be planted in alternate rows and protected with palmyrah leaves and thorns. Along the periphery four rows will be dibbled with palmyrah pyrenes in a staggered manner. Mulching will be done by working the soil and covering it with brushwood of Dodonaea Viscoasa.	467
Subsidiary silvicultural perations.—Watering each plant with five litres of water once in four days during the dry months is prescrtibed . One well for every 4 ha. bit will be dug.	468
Replacement of casualties.—Casualties should replaced as and when noticed to get full stocking within the first month Casualties should be replaced in subsequent year also.	469
Tending.—The plants will be freed from the sand and the thorns fence should be set right before the gales start in the succeeding year.	470
Other Regulations.—Planting area will be closed to grazing for five years. Control records will be maintained.	471 and 472
Statement showing the list of plantations raised during the period 1959 to 1974 is given.	473

CHAPTER VII.

THE BAMBOO WORKING CIRCLE.

	PARAGRAPH
Object of management.—The object of the Working Circle is to produce maximum quantity of Bamboos for industrial and domestic requirements.	474
General Constitution.—The Working Circle comprises all Bamboo bearing areas in Kulasekaram and Azhagiapandiapuram ranges.	475
Character of Vegetation.—Bambusa arundinacea which occurs in the moist deciduous type of forest	476
Division of the area.—The Worling Circle will have one felling series with three coupes	477
Silvicultural System.—The silvicultural system will be 'culm selection system'. Suitable areas will be artificially regenerated	478
Felling cycle.—Felling Cycle of three years prescribed	479
Regulation of yield.—The yield will be regulated by the area	480
Agency of exploitation.—The agency of exploitation will be through contractors However departmnetal extraction is srrongly recommended	481
Period of lease.—The lease period will be eight months from 1st of September to end of April next	482
Felling rules.—Felling rules are presoribed	483
Supply of local demand. —The contractor should sell to the ryots for their bonafide domestic agricultural purposes bamboos at the rates fixed by the District Forest Officer	484
Tabular statment of felling—A tabular statement of felling is given No coupe working till 1978, beacause of unscrupulous felling done earlier, Coupe not sold need not be sold in the next year	485 to 487
Regerneration Operations—Around Pechiparai lake rhizomes will be plated in 45 cm3 pits at 5m×5m espacement, yearly 10,000 plants will be planted	488
Other Regulation—Planted areas will be closed for grazing for five years Fire Protection will be done	489 and 490
Control-Control records will be maintained and any sporadic or general flowering of bamboo should be recorded in the control journal	491 and 492

CHAPTER VIII.

THE GRAZING WORKING CIRCLE.

	PARAGRAPH.
Object of Management.—The object is to provide adequate pasture for the cattle in the villages adjoining the forests	493
General Constitution.—The Working Circle will be included all the Forest areas except those areas closed to grazing for specific purposes	494
Closure to grazing.—All plantations and coupes will be closed to grazing for the period of 5 years from the year of formation or felling for silvicultrual reasons. Areas subject to incendiarism may be closed to grazing at the discretion of the District Forest Officer. The entire Kalakad sanctuary will be closed.	495
Grazing notification.—Every year a notification will be issued not later than May ..	496
Grazing limit.—The whole division forms one grazing limit	497
Regulation of grazing.—All animals except goats may be licenced to graze inside the forests	498
Grazing fees.—The existing fees for grazing different types of animals is given ..	499
Grazing permit .—A permit is valid from 1st July to 31st June	500
Penning.—Penning is allowed in approved pens at 5 paise per head of cattle. The list of approved pens is given. No penning to be allowed in Kalakad Sanctuary ..	501-502
Fodder grass.—Free removal of fodder crops is allowed from areas not closed to grazing under certain conditions	503
Concession .—Kanis can permit their own cattle to graze free	504
Control.—The relevent control records will be maintained	505

CHAPTER IX.

THE MINOR FOREST PRODUCE WORKING CIRCLES.

	PARAGRAPH
General Constitution.—The Working Circle will cover all the forests under the control of the Forest Department excluding the area leased out to Bombay-Burmah Trading Corporation	506
Analysis and valuation of the crop .—The Important items of Minor Forest Produce occuring in the division are given	507
Division of the area.—A list of lease units and the lease periods for different units is given	508
Agency of exploitation : The exploitation will be through the agency of contractors. But departmental collection can be done if necessary after obtaining permission of Conservator of Forests. Ivory, Deer horns and remaining dead animals will be collected departmentally. Manure leaves will be sold by permits at Seigniorage rates. Stone quarry can be opened by the District Forest Officer. Reeds have been leased to Sun Paper Mills. Kanis have certain rightsadmitted by the rules, under the erstwhile Travancore-Cochin State Government, given in appendix VIII.	509 to 515
Regeneration operations.—The existing cloves plantations will be maintained by the Divisional Forest Officer, Cloves division newly formed	516 and 517
Control.—Control records will be maintained	518

CHAPTER X—THE PROTECTION WORKING CIRCLE.

	PARAGRAPH.
Object of management.—The object of the Working Circle is to get the more important indirect benefits in the interest of soil Conservation water supply and modernisation of weather.	519 and 520
General Constitution.—The Working Circle comprises of all the areas in the division not included in any of the working circle other than the Minor Forest Produce and Grazing Working Circle	521
Method of treatment.—No exploitation for timber or fuel will be done. But grazing of cattle and collection of Minor Forest Produce will be permitted. Cultivation of cardamom should not be encouraged	522

CHAPTER XI—MISCELLANEOUS REGULATIONS.

	PARAGRAPH.
Chapter XI—Miscellaneous Regulations	523
Rubber Circle. —The Rubber Circle forming an extent of about 5,000 ha. in Kanniyakumari district is under the management of the Conservator of Forests, Rubber Circle and is excluded from the prescription of the plan	524
Clove Plantation are not governed by this plan	525
Farm Forestry Plantation : Plantations are raised since 1963 in porambokes as village forests. The existing plantations and future areas suitable for regenerations come under one felling series and is managed under the silvicultural system—clearfelling followed by artificial regeneration with rotation 10 years for Acacia arabica and 30 years for other miscellaneous species. At the end of rotation period such of the plantations fit for felling will be clearfelled and regenerated. Coppice growth will be fosted. A list of existing plantations, a tabular statement of felling and a list showing areas available for regeneration are furnished ..	526 to 539
River Fringe and Canal Bank Plantations : Plantations have been raised since 1956 along the Thambarabarani river banks and its canals. Some of the plantations have been handed over to the Public Works Department. The existing plantations and the areas suitable for regenerations come under the scheme. The object is to protect the banks from erosion and augment supply of timber and fuel requirement of local population in addition to catering to the aesthetic needs of the public. There will be two planting series—Thambarabarani and Manimuthar. The silvicultural system will be clearfelling followed by artificial regeneration. The species suggested are Teak, Dalbergia sissoo, Eucalyptus hybrid, Pongamia glabra, Bamboos, Ceiba pentandra, Acacia planifrons and Acacia ferruginea. The existing plantations will be improved by tending on thinning as necessary and new plantation raised, especially in the newly formed series along the Manimuthar Canal Bank. A list of existing plantations and their condition is given. Also a statement showing the number of seedlings and the location to be planted along Manimuthar Canal is given	540 to 559
Sea Coast Plantations : Plantations have been raised since 1960 along the sea coast near Puthanthurai and Kovalam in Kanniyakumari district. Casuarina and Acacia planifrons have been planted. A list of existing plantations is given. These plantations will be periodically inspected and maintained	560 and 561
Introduction of Pines in Upper Kodayar When the construction of Upper Kodayar Dam was taken up useful timber species were removed and the unwanted growth was left behind. When the dam construction was completed many islands were seen above the F.R.L. and also some areas around the lake having been included in the coupes. They contained useless growth and innumerable stumps and presented a very ugly appearance. Attempts were made to reafforest this area starting in 1972. Grevellia robusta, Bamboos, Reeds, Eucalyptus grandis and Albizzia falcata have been tried. Except Eucalyptus grandis the other have not done well but this species also does well only when the interspace is skinned which means huge cost and heavy soil wash into the lake. A trial plot of Pinus patula over a small extent has shown promise through no care was bestowed. With adequete allotment of funds and proper care succesful plantations of Pines can be raised which will improve the aesthetic value and get good revenue also. So planting Pinus patula every year over an extent of 10 ha. is prescribed	562 to 566
Kandamparai Teak Plantations : Teak Plantations have been raised in Kandamparai, Singampatti Ex-Zamin Forest of which 98 acres lie in Tirunelveli South Division. The prescription for maintenance of these plantations prescribed in the previous plan have not been carried out. Not a thorough cleaning operation and thinning are prescribed and thereafter maintained	567 to 570
Kani Settlements : There were 23 Kani Settlements in 1959 which have increased to 47 encroaching upon valuable forests. The prescriptions suggested in the last plan have not been carried out. These Kani Settlements are just like cancer within the forest. The valuable trees are girdled. So it is proposed to allot a compact block of forest to these Kanis or in the alternative to demarcate the existing holdings by erecting ferro concrete pillars and also exploit valuable trees within these settlements, further planting Albizzia falcata in six rows around the periphery is suggested.	571 to 575

Kaliavoor Reserved Forest—The Kaliavoor Reserve occupied a land which is vulnerable for erosion by wind and water. This area has been under the management of Public Works Department during for period 1925 to 1960. This area after taken over in 1960 was managed under the working scheme drawn by Thiru S. A. Rahmatullah. The area has been gone over for felling twice before and some of the coupes have been felled in third rotation and they are mostly without any vegetation. So it is proposed to stop the further exploitation and develop this area as a picnic spot. 576 to 585

Sandalwood : A small patch of sandalwood is seen in Singampatty forest along the road near Bombay-Burmah Trading Corporation. This area will be demarcated and protected. No exploitation is prescribed 586

Nature Reserves : In an attempt to preserve some of the beautiful natural forests, nature reserves have been formed for permanent preservation in Sengaltheri (Kalakad Reserved Forest). They form contigeous blocks. These will be protected for educational and ecological value 587

Cardamom leases : There are 31 cardamom lease units in the division. A list is given. To prevenue encroachments into the reserve, permanent demarcation by erecting pillars on the ground and chiselling numbers on the trees are suggested. 588 to 593

Chip Board : The Madras Chip Board Limited., Rajapalayam is permitted to fell and remove certain species of Softwood trees from Veerapuli Reserve on payment of Rs. 5 per cubic metre of merchantable red timber at the stump. The coupes are marked in the map but not clearly demarcated on the ground. Wasteful exploitation is noticed. In the interest of the adjacent Lion tailed macaque Sanctuary, desirable to discontinue this contract .. .. 594 to 598

Eta reeds : The right to collect and remove Eta reeds has been leased out to Sun Paper Mills for a period of 12 years from 1st April 1970, under certain conditions. A felling cycle of 4 years is prescribed and four coupes are formed. The important conditions of working are given and caution is given that the weighment of reeds should be done within ten days of extraction .. .. 599 to 605

Check-posts : Theere are nine checkposts. Suggestions are given to increase the subordinate strength in certain important check-posts and also provide permanent buildings for the checkpost and as well for the staff .. .. 606 to 607

Fire Protection : Fire protection measure have been prescribed under various working Circles. However fire tracing is prescribed for the state boundaries, roads and paths, plantations and timber depots. Fire patrol and fire fighting operations are prescribed. Control records to be maintained are indicated .. 608 to 610

Boundaries : Chaotic conditions prevail as regards the Reserve boundaries of the forests in Kanniyakumari District. In the absence of the permanent demarcation on the ground numerous encroachments and enlargement of holding have taken place. Valuable forest have been destroyed. So it is suggested to resurvey and demarcate the forest and in the process evict the encroachers and also prepare map. A special survey party has to be put on the job to work along with the Assistant Director of Survey and Land Records, Nagercoil. In Tirunelveli district also the boundaries have to be verified .. .. 617 to 626

Buildings and Wells : The existing buildings and wells must be improved where necessary and new buildings constructed in a phased programme. Suggestions are given for them .. .. 627 to 634

Roads : All the roads and bridges will be maintained in good conditions. The importance of proper drainage is stressed. Proposals are given to improve the Sengaltheri Road, sengaltheri Netrikal bridle paith, to form bridle paith from to Kakkachi and also to improve Balamore Muthukuzhi vayal road .. .. 635 to 640

Rain guages : There are no rainguages in the division. It is suggested to install rainguages in different places and get monthly reports from the subordinates and maintain a register in the District Forest Office. .. .. 641 to 643

Wildlife : Shooting is prohobited in the division from 1st April 1968. The activities of the Wildlife Association are given. The existing Sanctuaries are noted and suggestions are given to declare a few more water bird refuges and also establish a Zoo in Gangaikondan. Protection of the same in Kalakad Sanctuary are mentioned .. .. 644 to 649

Livestock : The elephant camp at Kalikesam has four male elephants and three female elephants. Suggestions are given to improve the camp for better upkeep of the elephants. Elephants capturing operations are slso suggested .. .. 650 to 651

Abandoned estates : Some 45 abandoned estates added to the Veerapuli Reserved Forest are to be notified under Forest Act 652

Electricity Board : Large areas are occupied by the Electricity Board at Upper Kodayar and Lower Kodayar but they are not demarcated on the ground and no, proper sketches are available. Further large amounts due from Electricity Board have not been realised. It is suggested to set-right these matters 653

Reservation of Ex-zamin Forest and Other Reserve: The Ex-Zamin forest taken over as early as 1952 and 1954 in Tirunelveli district are yet to be constituted into Reserve Forests. No progress has been made in bringing out notifications. In Asambu proposed Reserve Forest pending settlement valuable forests are being destroyed 654

Control : The Control records to be maintained are given. The importance of maintaining them is stressed .. .. 655 to 665

CHAPTER XII—ESTABLISHMENT AND LABOUR

resent position: The establishment of this division as on 1st January 1975 is given in Chapter-IV of Part-I 666

Formation of Boothapandi Range: Since the formation of Boothapandi Range confusion prevails on the jurisdiction and allotment of beats and sections among the three Ranges in Kanniyakumari district. It is suggested to have Aramboly as the Headquarters of Boothapandi Range .. .. 667 and 668

Additional Staff: The staff required for carrying out certain prescriptions suggested in this plan are given under the respective headings 669

Bifurcation of the Division: It is suggested to bifurcate Tirunelveli South Division in the interest of better management of the forests—one with headquarters at Palayamkottai and the other at Nagercoil 670

Labour: Labour though available in the villages cannot be easily drawn when regeneration operations are undertaken which coincides with agricultural operations unless higher wages are paid or supplemented with faggot wood. Much difficulty is experienced at Upper Kodayar. Forest Schedule of rates should be judiciously fixed .. .. 671 to 673

CHAPTER XIII—FINANCIAL FORECAST AND COST OF THE WORKING PLAN.

Financial forecast :—The estimated revenue and expenditure under each working circle and for the Miscellaneous Regulations prescribed are given 674

Cost of the Working Plan :—The cost of the Working Plan is Rs. 2,61,566.29. The revision of Tirunelveli South Plan was taken up on 1st August 1973 and completed on 31st December 1975 ... . 675 and 676

APPENDIX I.

CONTROL FORMS.

FORM No. I.

Clntrol Form—Teak Working Circle—Record of Thinnings.

Prescribed.			Done.			Yield.					
							Poles.				
Year.	Plantation to be thinned.	Area.	Year.	Plontatiou thinned.	Stems removed.	Timber.	TPL	TPM	TPS	Revenue realised	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

FORM No. II-A.

Control Form—Soft wood Working Circle—Record of Felling

Prescribed.			Dane.					
Year.	Coupe number or plantations.	Area.	Year.	Coupe No. or plantations.	Area.	Yield.	Revenue realised.	Remarks.
(1)	(A)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

FORM No. II-B.

Control Form—Softwood Working Circle—Record of Thinnings.

Prescribed.			Done.					
Year.	Plantation to be thinned.	Area.	Year.	Plantation thinned.	Stems removed.	Yield.	Revenue realised.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

FORM No. III.

Control Form— Fuel Working Circle— Record of Fellings.

Prescribed.			Done.			Yield.			
Year.	Series ond Coupe No.	Area.	Year.	Series and Coupe number.	Area.	Timber.	Year.	Revenue realised.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Form No. IV.

Control Form—Reafforestation Working Circle—Record of plantations.

Prescribed.				Done.							
Year.	*Locality and Coupe number.*	*Area*	*Operations.*	*Year.*	*Locality and Coupe number.*	*Area.*	*Operations.*	*Species.*	*Expenditure*	*Revenue, if any.*	*Remarks.*
(1)	(A)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Form No. V.

Control Form—Teri Forest Regeneration Working Circle—Record of Plantationas.

Prescribed.				Done.							
Year.	*Series and Coupe number.*	*Area.*	*Operations.*	*Yearr.*	*Seriesa nd coupe number.*	*Area.*	*Operations.*	*Species.*	*Expenditure.*	*Revenue, if any.*	*Remarks.*
(1)	(2P	(3)	(4)	(5)	(6)	(7)	(8)	(9)	)10)	(11)	(12)

Form No. VI-A.

Control Form—Bamboo Working Circle—Record of Felling

Preseribed.		Done.				
Year.	*Coupe number.*	*Year.*	*Coupe number.*	*Yield.*	*Revenue realised.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Form No. VI-B.

Control Form — Bamboo Working Circle—Record of Pantations.

Prescribed.			Done.				
Year.	*Number of plants.*	*Area.*	*Year.*	*Number of Plants.*	*Area.*	*Expenditure*	*Remarks.*
1)	(2)	(3)	(4)	(5	(6)	(7)	8)

FORM NO. VII.

Control Form—Minor Forest Produce Working Circle—Record of yield.

Year.	*Name of lease unit.*	*Revenue realised.*	*Yield obtained.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)

FORM NO. VIII.

Record of Works.

Name of Working Circle (Common to all Working Circles except protection working circle).

Prescriptions of the Working Plan.				*Operations carried out.*						*Remarks.*
Year.	*Name of work.*	*Locality.*	*Area in hectares.*	*Year.*	*Name of work.*	*Locality.*	*Area in hectares.*	*Cost of each item.*	*Total cost of each work.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

NOTE.—(1) Information entered in other forms need not be repeated here.

(2) Separate sheet should be used for each working circle and miscellaneous regulations.

(3) Each working circle has to be written up under these headings, namely ;— (*a*) Natures prescribed ; (*b*) Measures suggested and (*c*) Measures neither prescribed nor suggested but carried out during the year.

(4) Section 44 of the Forest Department Code will be a guidance.

FORM NO. IX.

Register of deviation.

Serial number of deviation.	*Year.*	*working Circle.*	*Working plan prescription*		*Nature of deviation.*	*Reason for deviation.*	*Number and date of order sanctioning the deviation*
			Paragraph number.	*prescription.*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

FORM No. X.

Annual summary of revenue and expenditure.

Serial number and unit.	*Revenue realised.*	*Expenditure incurred.*	*Profit.*	*Loss.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1. **Teak** Working Circle	..	..	..	..	..
2. Softwood Working Circle	..	..	..	..	..
3. Fuel Working Circle	..	..	..	..	..
4. Reafforestation Working Circle	..	..	..	..	..
5. Teri Forest Regeneration Working Circle	..	..	..	..	..
6. Bamboo Working Circle	..	..	..	..	..
7. Grazing Working Circle	..	..	..	..	..
8. Minor Forest Produce Working Circle	..	..	..	..	..
9. Protection Working Circle	..	..	..	..	..
10. Miscellaneous prescriptions	..	..	..	..	..
11. Establishment	..	..	..	..	..

FORM NO. XI.

Control journal.

1. General	Comments and observations on the working of nine different working circles prescribed in the plan, problems if any, silvicultural, administrative and any other aspect, suggestion for improvement.
2 Staff and Labour	Notes of adequacy of staff and availability of labour.
3. Jurisdiction and Headquarters	Changes in jurisdiction of beats sections, ranges and division; change of headquarters for any of the units and necessity.
4. Roads, buildings and wells	Necessity for new roads, buildings and wells or improvement of the existing ones.
5. Wildlife	Position of game preservation; improvements noticed in their population and movements. Sanctuaries and refuges, suggestions for their improvement.
6. Forest Settlement Boundaries	Notes on progress made in Forest Seltlement, Survey checking and maintenance of boundaries of the Reserved Forests.
7. Leases	Notes on cardamon leases, Chip-board Reeds, Electricity Board and Talayuthu Cement.
8. Maps and Journals	Whether control maps were posted showing coupes worked and all plantations raised within and outside plan prescriptions and also whether plantation journals were written up-to-date. Whether record copy of the Reserved Forest maps were posted showing changes if any.
9. Miscellaneous	Separate notes on Rubber Circle, Farm Forestry River Fringe and Canal Bank Plantations, Sea, Coast Plantations, Pine Plantations, Kandamparai Teak Plantations. Kani Settlements, Kaliavoor Reserved Forests, Sandalwood, Nature Reserves, Royalties, Fire protection, Rainguages, Livestock, etc.
10. Other activities	Planting and other measures undertaken outside plan prescriptions, experience and results.

N.B.—The District Forest Officer will bestow special attention in writing up the above control journal as it will form the basis to judge the works done in the division and if maintained properly will be treat help when the plan comes to be revised.

APPENDIX-II.

BOTANICAL LIST OF IMPORTANT PLANTS IN TIRUNELVELI SOUTH DIVISION.

Botanical name. (1)	*Tamil name.* (2)	
Abrus precatorius	Kundumani	Common.
Acacia nilotica Syn. A. arabica.	Karuvelam	Do.
Acacia concinna	Seyakkai	Occasional.
Acacia ferruginea	Parambai	Do.
Acacia intsia	Indu or Incha	Common.
Acacia latronum	Kaka odai	Do.
Acacia leucophloea	Velvelan	Occasional.
Acacia pennata	Vellai indu	Do.
Acaica planifrons	Odai	Common.
Acacia chundra Syn. A. sundra.	Karungali	Do.
Acrocarpus fraxinifolius	Malankonnai or Malaveppu.	Rare.
Actinodaphne hookeri	Thali	Do.
Adina cordifolia	Manjakadambai	Common.
Aegle marmelos	Vilvam	Do.
Aglaia courtallensis	Vegula chokla	Do.
Aglaia roxburghiana	Chokla	Occasional
Agrostistachys longifolia	Manikulikkai	Common.
Agrostistachys indica	Mancharai	Do.
Ailanthus excelsa	Peemaram	Do.
Ailanthus malabarica	Mattipal	Do.
Alangium salvifolium Syn. A. lamarckii.	Allinji	Do.
Albizzia amara	Usil	Do
Albizzia lebbek	Vagai	Do.
Albizzia moluccana		Do.
Albizzia odoratissima	Selavagai or Chithalavagai.	Do.
Albizzia procera	Velvagai	Occasional.
Albizzia stipulata	Nir usil or pulivagai	Common.
Alphonsea Zeylanica		Occasional.
Alstonia scholaris	Ezhilaipalai	Common.
Amoora canarana	Karagil	Rare.
Amoora rohituka	Vengal	Do.
Anacardium cocidentale	Kollama or Munthiri	Common.
Anacolosa densiflora	Kalmanikkam	Rare
Anogeissus latifolia	Vekkali	Common.

Anthocephalus Cadamba	Kola aiyila or Vellakadambu	Occasional.
Antiareis toxicaria	Maravuri	Do.
Aporosa lindleyana	Mlrvetti	Do.
Arenga wighti	Alampanel	Do.
Aristida depressa	Ooslpullu	Common.
Artocarpus hirsuta	Aiynl pila	Do.
Artocarpus heterophyllus Syn. A. integrifolia.	Pila	Do.
Arund donaxo	Nanalpillu	Do.
Arundinaria wightiana		Occasional.
Asparagus racemosus	Kattuavari	Do.
Atalantia monophylla	Kattu elimicham	Do.
Azadirachta indica	Vemby	Common.
Baccaurea courtallensis	Thonthe	Occassional.
Balanocarpus utilis	Karunkongu	Do.
Bambusa bambos Syn. B. arundinacea	Moongil	Common.
Bassia longifolia	Kattuilluppai	Common.
Bauhinia malabarica	Valathi	Do.
Bauhinia racemosa	Athi	Do.
Bauhinia tomenosa	Athi	Occasional.
Bauhinia vahlii	Kattumandarai	Do.
Beilschmiedia bourdillini		Do.
Bentinckia coddapanna	Konthapanei	Do.
Bischofia javanica	Milachadayam	Do.
Bombax insignis	Kalilavu	Do.
Bombax ceiba	Muliluvai	Common.
Syn. Salmalia malabarica Syn. Bombax malabaricum		
Borassus flabellifer	Panai	Do.
Borreria hispidita		Occasional
Bridelia retusa	Mulluvengai	
Buchanania Lanza Syn, B.latifolia.	Madama	Common
Butea frondossa	Elaporasu	Do.
Cadaba trifoliata	Purna	Do.
Caesalpinia sappan	Sappangu	Do.
Calamus rotang	Perambur	Do.
Calamus travancoricus	Maniperambu	Do.
Calophyllum elatum	Pinnai	Do.
Calophyllum inophyllum	Punnamkottai	Do.
Calophyllum trapezifolium	Cherupinnai	Occasional.
Calotropis gigantea	Erukkalai	Common.

Canarium strictum	Karunkunthirikam	Common.
Canthium didymum	Sulunthu	Do.
Canthium parviflorum	Sengarai	Do.
Capparis horrida	Adondai	Do.
Carallia integerrima	Andimirian.	Occasional.
Careya arborea	Ayma	Common.
Carissa carandas	Kalakkai	Do.
Caryata urens	Koondapanai	Do.
Casearia tomentosa		Occasional.
Cassia auriculata	Avaram	Common.
Cassia fistula	Konnai	Do.
Cassia montana	Kunnavaram	Do.
Cassia siemea	Manjakonnai	Do.
Casuarina equisetifolia	Savukku	Do.
Ceiba pentandra Syn. Eriodendron anfractuosum.	Illavam	Do.
Celkis wightri	Vellaithooarai	Rare.
Chloroxylon swietenia	Vaimar or Porasu	Common.
Chukrasia tabularis	Medagiri Vembu	Occasional.
Cenchrus ciliaris	Kollukattaipul	Do.
Cinnemomungracile		
Cinnamo muzeylanicum	Lavangam	Do.
Clausena indica	Nana	Do.
Clausena willdenovii	Kattu Veppilai	Do.
Clerodendrum infortunatum	Vattakanni	Common.
Cleistanthus collinus	Odagu	Do.
Cochlospermum religiosum Syn. C. gossypium.	Thanaku	Occasional.
Cocos nucifera	Thennai	Common.
Combretum ovalifolium	Odankudi	Rare.
Commiphora berryi Syn. Balsamodendron berryi.	Mulkiluvai	Common.
Commiphora caudata Syn. Protium candatum.		Do.
Cordia dichotoma Syn. C. myxa.	Virusham	Occasional.
Crataeva religiosa	Mavalingam	Occasional.
Croton malabaricus	Thuvattupulavu	Do.
Cullenia excelsa	Vedipila	Common.
Cureuma angistifolia	Kattukovai	Do.
Cymbopogon species	Vasanipullu	Do.
Cypres pangarai	Koraipul	Do.
Dalbergia latifolia	Thothagathi	Do.
Dalbergia multiflora	Viruvetta	Do

Dalbergia paniculata	Adukkuvagai	
Dalbergia sissoo		
Delonix elata		
Syn. Poinciana elata	Vadamadaki	Occasional.
Dendrocalamus strictus	Moongil	Common.
Derris scandens	Punali	Occasional.
Dichopsis elliptica	Pallodi or Palvadinjan	Common.
Dichrostachya cinerea	Vadathalai	Do.
Dillenia pentagyna	Nai Thekku	Do.
Diospyros assimillis	Karunthalu	Occasional.
Diospyros bourdilloni	Karunthovarai	Do.
Diospyros embryopteris	Panichi	Do.
Diospyros foliosa	Vella thovarai	Do.
Diospyros insignis	Do.	Do.
Diospyros microphylla	Chinna thovarai	Do.
Diospyros montana	Vakkanai	Common.
Diospyros orixensis	Vella thovarai	Occasional.
Dipterocarpus bourdilloni	Karangi	Do.
Dodonaea viscosa	Virali	Common
Dolichandrone falcata	Pumpadri	Do.
Duranta		
Dysoxylum malabaricum	Vellagil	Occasional.
Dysoxylum beddomei	Chinngil	Do.
Ehretia laevis	Nariveli	Do.
Elaeocarpus oblongus	Athankottai	Do.
Elaeocarpus serratus	Olankarai	Do.
Elaeocarpus tuberculatus	Ruthraksham	Do.
Elaedendron glaucum	Karei	Do.
Elettaria cardamomum	Elakka	Occasional.
Emblica officinalis	Nellikkai	Common.
Entada scandens	Tellukoi	Do.
Erythrina variegata Syn. E. indica	Mullumurukku	Do.
Erythroxylon monogynum	Shemmanathi	Do.
Eucalyptus		
Eugenia caryophyllata	Kirambu	Rare.
Eugenia gardneri	Nirnaval	Occasional.
Eugenia laeta	....	Rare.
Eugenia munronii	....	Do
Eugenia pimento	....	Do.
Eugenia zeylanica	....	Do.
Eupatorium gladulosum	....	Common.
Euphorbia tirucalli	Tirukkalli	Do.
Euphoria longana Syn. Nephelium longana.	Solaipoovan	Do.

(1)	(2)	(3)
Evodia-lunu-ankenda Syn. E. roxburghiana.	Kattuchampakam or Kambli.	Rare.
Ferronia elephantum	Vilamaram	Occasional
Ficus asperrima	Iramparathan	Do.
Ficus benghalensis	Alamaram	Do.
Ficus religiosa	Arasamaram	Do.
Filicum decipens	Athadali	Do.
Flacourtia sepiaria	Kodikarai	Do.
Garcinia cambogia	Kodapuli	Do.
Garcinia echinocarpa	....	Do.
Garcinia morella	Makki	Do.
Givotia rottleriformis	Kottai thanaku	Do.
Gluta travancorica	Senkurinchi	Do.
Glycosmis pentaphylla	Kulapanai	Common.
Gmelina arborea	Kumil	Occasional.
Gmelina asiatica	Kumil	Do
Gnetum scandens	Anapendu	Rare.
Gordonia obtusa	....	Do.
Grewia hirsuta	Kalunnu	Occasional.
Grewia asiatica	Palica	Do.
Grewia glabra Syn. G. Laevigata	Unnu	Do.
Grewia tiliaefolia	Thadasu	Common.
Grevillea robusta	Kathadi	Common.
Gyrocarpus jacquini	Thanukku	Do.
Hardwickia binata	Acha	Occasional.
Hardwickia pinnata	Kolavu	Do.
Harpullia cupanioides		Rare.
Hemidesmus indicus	Nannari	Do.
Helecteres isora	Valampuri	Common.
Hemicyclia venusta	Vel elumbu	Do.
Hemigyrosa deficiens	....	....
Heritiera papilio	Sadanangu	Common.
Hippocratea indica	Morusarkodi	Occasional.
Holarrhena antidysentrica	Kodagupala	Common.
Holigarna arnottiana	Kattutherai	Occasional.
Holoptelia integrifolia	Aya	Common.
Homalium zeylanicum		Rate.
Hopea parviflora	Kongu	Common.
Hydnocarpus alpina	Maravetti	Occasional.
Hydnocarpus laurifolia Syn. H. wightiana	Maravetti	Do.

(1)	(2)	(3)
Hymenodictyon excelsum	Naikadambu	Do.
Ichnocarpus frutescens	Oothalkodi	Common.
Indigofera species	....	Occasional.
Ipomea digitata	Vallikilangu	Do.
Ipomea biloba	....	Do.
Impatiens species	....	Do.
Ixora arborea Syn. I. Parviflora	Sulundu	Common.
Jasminum humile	Kattumalli	Do.
Jatropha curcas	Kattamanak	Do.
Kydia calycina	Vendai	Occasional.
Lagerstroemia flosreginge	Poomaruthu	Do.
Lagerstroemia lanceolata	Venteak	Common.
Lannea coromandelica Syn. L. grandis	Oothiam	Do.
Lansium anamallayanum	Santhanaviri	Occasional.
Lantana camara	Arippu	Common.
Laportea crenulata	Anaichorian	Occasional.
Leea sambucina	Nakku	Occasional.
Lepisanthestetraphylla	Nekota	Rare.
Leucaenea glauca	Thumbai	Occasional.
Limonia acidissima	Kattuelumichai	Do.
Linociera malabarica	Porumbolu	Do.
Litsea stocksii	....	Do.
Litsea zeylancia	Shenbagapalai	Do.
Lophopetalum wightianum	Venkottai	Do.
Loranthus	Ethukanni	Common.
Maba buxifolia	Irambali	Do.
Macaranga roxburghii	Vattakanni	Do.
Machilus macrantha	Kolamavu	Do.
Mallotus philippinensis	Thavattai	Do.
Madhuca latifolia Syn. Bassia latifolia	Illuppai	Do.
Mangifera indica	Mau	Do.
Mappia foetida	Arali	Occasional.
Melia dubia	Malaivembu	Do.
Melia indica	Vembu	Common.
Meliosma microcarpa Syn. M. arnottiana	Kusavi	Do.
Memecylon gracile	Veikasa	Occasional.
Mesua ferrea	Nangu	Do.
Michelia champaca	Champakam	Do.
Miliusa roxburghiana	....	Do.

Mimosa pudica	Thottachurungai	Common.
Mimusops elengi	Magilam	Occasional.
Mimusops hexandra	Olankapalai	Do.
Mitrephora heyneana	....	Rare.
Morinda tinctoria	Manjanathi	Common.
Moringa oleifera Syn. M. Pterygosperma.	Kattu Murungai	Occasional.
Mundulea sericea Syn. M. suberosa.	Pullavaram	Common.
Murraya paniculata Syn. M. exotica	Kattn Karuveppilai	Occasional
Mussaenda frondosa	....	....
Myristica attenuata	Kattujathika	Do.
Myristica beddomei Syn. M. laurifolia	Do.	Do.
Myristica malabarica	Do.	Do.
Nothopegia colebrookiana	Sorapalai	Common
Ochlandra brandisii	Etta	Do.
Ochlandra rheedi	Do.	Do.
Ochlandra travancorica	Do.	Do.
Odina wodier	Odhium	Common.
Ormosia travancorica	Malaimanjadi	Occasional.
Palaquium ellipticum	Palai	Do
Pandanus tectorius	Thalai	Common.
Pavetta indica	Pavetta	Do.
Perotis indica	Narivalpullu	Do.
Phoenix farnifera	Eecham	Do.
Phoenix sylvestris	Do.	Do.
Pinanga dicksonii	Kana kamugu	Occasional
Piper nigrum	Milagu	Common
Piper subpeltatum	Do.	Do.
Pithecolobium dulce	Kodukkapuli	Do.
Plectronia didyma	Irambarathan	Occasional
Plumeria rubra Syn. P. acutifolia	Kallimandarai	Do.
Podocarpus latifolia	Naramboli	Do.
Poecilo neurson indicum	Voila, Puthangali	Rare
Polyalthia cerasoides	Nedunar	Occasional
Polyalthia fragrans	Do.	Do.
Polyalthia longifolia	Nettilingam	Occasional
Pongamia pinnata Syn. P. glabra	Pungam	Common
Premna tomentosa	Kolukkattai tekku	Do.
Prosopis juliflora		Do.
Prospis spicigera	Parambai	Do.
Pterocarpus marsuium:	Vengai	Do.

(1)	(2)	(3)
Pterocarpus santalinus	Ratnachandanan	Occasional
Pterolobium indicum	Karindu	Common
Pterospermum ocerifolium	Thadayamaram	Occasional
Pterospermum glabrescens	....	....
Pterospermum rubiginosum	Chithalaipolavu	Do.
Putranjiva roxburghii	Karupalai	Rare
Pygeum wightianum	Attanarikongu	Do.
Purarea species	....	Common
Randia dumetorum	Karai	Do.
Rauwolfia serpentina	Avalpuri	Occasional
Samanea saman Syn. Pithecellobium saman	Thungumoonjimaram	Common
Samseviera zeylanica	Marul	Occasional
Santalum album	Sandanam	Do.
Sapindus emarginatus	Neikottai	Do.
Sapindus laurifolia	....	Do.
Schleichera oleosa Syn. S. trijuga	Poovam	Common
Samecarpus anacardium	Sherankottai	Occasional
Sida rhombifolia	Karuthativeru	Occasional
Solanum pubescens	Sundaikai	Common
Spatholobus	Pilachi	Do.
Spondias pinnata Syn. S. Mangifera	Ambalam	Occasional
Stephegyne parvifolia	Nirkadambu	Do.
Sterculia alata	Anaithondi	Common
Sterculia guttata	Thondi	Occasional
Sterculia urens	Senthanuku	Do.
Sterculia villosa	Maruth–an	Do.
Stereospermum personatum Syn. S. chelonoides	Poompadiri	Common
Sterblus asper	Pira	Do.
Strobilanthes species	Kurinji	Do.
Strychnos nuxvomica	Etti	Do.
Strychnos potatorum	Thethankottai	Occasional
Svzygium cumini Syn. Eugenia jumbolana	Naval	Common
Swietenia macrophylla	....	Occasional
Symplocos spicata	Kamblivetti	Do.
Tamarindus indica	Puli	Common
Tectona grandis	Tekku	Do.
Terminalia arjuna	Kolamarudu, Nirmarudu	Do.
Terminalia bellerica	Thani	Do.
Terminalia chebula	Kadukkai	Do.

(1)	(2)	
Terminalia paniculata	Maruthu	Do.
Terminalia travancorensis	Peikadukka	Occasional
Terminalia tomentosa	Karimarudu	Common
Tetrameles nudiflora	Chini	Occasional
Thespesia populnea	Poovarasu	Common
Toddalia asiatica	Kattumilagu	Rare
Toona ciliata Syn. Cedrela tonna	Santhana vembu	Common
Tinospora cordifolia	Sinthil	Occasional
Trema orientalis	Amparuthi	Common
Trewia nudiflora	Nayikumil	Occasional
Vateria indica	Vellaikundrikam, Vella pinnari	Do.
Ventilago maderaspatana	Vembadam	Common
Vornonea arborea	Seithi	Occasional
Vitex altissima	Mylai	Common
Vitex negundo	Nochi	Do.
Vitis quadrangularis	Perandai	Do.
Walsura piscida	Valsura	Do.
Webera corymbosa	Papatan	Occasional
Wendlandia notoniana	Thovarai	Do.
Woodfordia floribunda	....	Do.
Wrightia tinctoria	Palai	Common
Xanthophyllum flavescene	Narathai	Occasional
Xylia xylocarpa	Irul	Do.
Zanthoxylum rhetsa	Kattumurukku	Do.
Zizyphus mauritiana Syn.Z. jujuba	Elandi	Common
Zizyphus oenoplia	Kottai	Do.
Zyzyphus trinervia	Karikattan	Occasional
Zizyphus xylopyrus	Kottai	Do.
Zingiber cassumunar	Kattumanjal	Common

APPENDIX III.

LIST OF LOCAL NAMES.

Tamil Name. (1)	*Botanical Name.* (2)
Adondai	Capparis horrida
Athadali	Filicium decipens
Anapendu	Gnetum scandens
Anaithondi	Sterculia alata
Avalpuri	Rauwolfia serpentina
Chini	Tetrameles nudiflora
Elaporasu	Butea frondosa
Erukkalai	Calotropis gigantea
Ethukanni	Loranthus
Irul	Xylia xylocarpa
Karuvelam	Acacia nilotica Syn. Acacia arabica
Kattuvari	Asparagus racemosus
Kattuelimicha	Atalantia monophylla
Kattumandarai	Bauhinia vahlii
Kalilavu	Bombax insignis
Konnavaram	Cassia montana
Kollukottaipul	Cenchrus ciliaris
Kattukorrai	Curcuma angustifolia
Koraipul	Cypres panagarai
Karunthalu	Diospyros assimilis
Kirambu	Eugenia caryophyllata
Kattuchampakan or Kumbli	Evodia-lunu-ankenda Syn. E. roxburghiana
Kodikarai	Flacourtia sepiaria
Kottampuli	Garcinia cambogia
Kottai	Givotia rottleriformis
Kathadi	Grevillea robusta
Kadugupala	Holarrhena antidysentrica
Kattumalli	Jasminum humile
Kattumanak	Jatropha curcas
Karuveppilai	Murraya paniculata Syn. M. exotica
Kotujathuka	Myristica attenuata
Kodukkapuli	Pithecolobium dulce
Kollimandarai	Plumeria rubra Syn. P. acutifolia
Karupalai	Putranjiva roxburghii
Karuthattuveri	Sida rhombifolia
Kamblivetti	Symplocos spicata
Kattumilagu	Toddalia asiatica
Kattumanjal	Zingiber cassumunar

Tamil Name. (1)	*Botanical name.* (2)
Mancharai	Agrostistachys indica
Mulvengai	Bridelia retusa
Maniperambu	Calamus travancoricus
Malaivembu	Melia dubia
Milagu	Piper nigrum
Maruthan	Sterculia villosa
Maruthu	Terminalia paniculata
Nanalpilu	Arundo donax
Nana	Clausena indica
Nannari	Hemidesmus indicus
Naikadambu	Hymenodictyon excelsum
Nekku	Leea sambucina
Nekota	Lepisanthes tetraphylla
Naramboli	Podocarpus latifolia
Narivalpul	Perotis indica.
Nirmarudu	Terminalia arjuna
Naikumil	Trewia nudiflora.
Nochi	Vitex negundo.
Oosipullu	Aristida depressa.
Odugu	Cleistanthus collinus.
Oothalkodi	Ichnocarpus frutescens.
Oothiam	Lannea coromandelica Syn. L. grandis.
Purna	Cadaba trifoliata
Punali	Derris scandens.
Palica	Grewia asiatica.
Poomarudu	Lagerstroemia flosreginae.
Porambalu	Linociera malabarica.
Pilachi	Spatholobus
Peikadukk	Terminalia travancorensis.
Poovarasu	Thespesia populnea.
Perandi	Vitis quandrangularis.
Papatan	Webera corymbosa.
Palai	Wrightia tinctoria.
Rathachendrana	Pterocarpus santalinus.
Sappangu	Caesalpinia sappan.
Sulundu	Canthium didymum.
Senkarai	Canthium parviflorum.
Savukku	Casuarina equisetifolia.
Santhanavembu	Toona ciliata Syn. Cedrela toona.
Santhana Viri	Lansium anamallayanum.
Shembagapalai	Litsea zeylancia.

(1)	(2)
Sundaika	Solanum pubescens.
Senthanuku	Sterculia urens.
Senthil	Tinospora cordifolia.
Seithi	Vernonea arborea.
Thali	Actinodaphne hookeri.
Thennai	Cocos nucifera.
Tellukai	Entada scandens.
Thadasu	Grewia tiliaefolia.
Thavattai	Mallotus philippensis.
Thumbai	Leucanea glauca.
Thottachurungi	Mimosa pudica
Thoongumoonji	Samanea saman Syn. Pithecellobium saman.
Thadayamaram	Pterospermum acerifolium.
Thevarai	Wendlandia notoniana.
Valvagai	Albizzia procera.
Vangal	Amoora rohituka.
Vattakanni	Clerodendrum infortunatum.
Vasanipullu	Cymbopogon species.
Velelumbu	Hemicyclia venusta.
Vallikilangu	Ipomea digi tata
Vendai	Kydia calycina.
Venteak	Lagerstroemia lanceolata.
Venkottai	Lophopetalum wightianum.
Veikasa	Memecylon gracile.
Voila	Poecilon neuron indicum
Vadamadaki	Delonix elata syn. Polinciana elata.
Valsura	Walsura piscida .

APPENDIX IV.

List of reserved forests with rights and concessions in Kanniyakumari district.

I. Name of Block .. .. Kalkulam Grazing Block II.
Taluk .. .. .. Kalkulam.
Village .. .. .. Kalkulam (Hills).
Extent .. .. .. 109. 12 acres.

Situation.—This block is situated about 3/4 of a mile north of the Kalkulam. Kumarakoil Temple and comprises the shola of survey No. 6341 of No. 5 Kalkulam (Hills), Kalkulam taluk.

There are no public or private rights within the reserve.

II. Name of Block .. .. Kalkulam Grazing Block I.
Taluk .. .. .. Kalkulam.
Village .. .. .. Kalkulam (Hills).
Extent .. .. 95.05 acres.

Situation.—This block is situated east of Kumarakoil Temple and comprises the whole of survey Nos. 6315, 6316, 6317/1 and 6317/2 and 6318 of No. 5. Kalkulam (Hills), Kalkulam Taluk.

III. Name of Block .. .. Pechiparai Block I (a).
Village .. .. .. Thirparappu.
Taluk .. .. .. Kalkulam.
Division .. .. .. Padmanabhapuram.
Extent .. .. .. 66 acres 35 cents.

Situation.—This block is situated near the Pechiparai Dam south of the P.W.D. Reserve and between the Kodayar River and the left bank channel comprising of survey Nos. 3095/1 to 3095/20 of Thirparappu village of Kalkulam Taluk.

Remarks.—There are no rights either public or private within the block. The claim to the small bit of land in survey Nos. 3142/11 and 12 lying outside the eastern boundary of the block between cairn Nos. 11, 12 and 13 is admitted by the Forest Settlement Officer after excluding the public well sitauted at the southern corner of the land and also the pathway 15 links broad leading to the same from the Kulasekaram Pechiparai road. The right of the use of the above pathway and the water from the well is allowed to the public.

IV. Name of Block .. .. Pechiparai Block I (b).
Village .. .. .. Thirparappu.
Taluk .. .. .. Kalkulam.
Division .. .. .. Padmanabhapuram.
Extent .. .. .. 81 acres 46 cents.

Situation.—This block is situated near Pechiparai south of the P.W.D. Reserve lies between the left bank channel and the Kulasekaram Pechiparai road and comprises survey numbers 3142/2 to 3142/23 of Thirparappu village, Kalkulam Taluk.

V. Name of Block .. .. Pechiparai Block II (a).
Village .. .. .. Thirparappu.
Taluk .. .. .. Kalkulam.
Division .. .. .. Padmanabhapuram.
Extent .. .. .. 37 acres 15 cents.

Situation.—Starting from a village boundary stone on the north-west corner of survey No. 2,818,38 on the left bank of the Kodayar river, the boundary runs eastward along the left bank of the Kodayar river to the northern most corner of survey number 2818;42.

VI.	Name of Reserve	Klamalai Extension Reserve.
	Taluk	Neyyattinkarai.
	Village	Ottasekaramangalam (Kani lands).
	Extent	659 acres 55 cents (excluding the area of Meyyar River Poramboke).

Situation.—The block is situated to the south of Kottur Reserve and to the west of Klamalai Reserve and comprises the whole of survey Nos. 436/1, 437/1 and 2 and also the river poramboke in survey No. 436/2 and portion of survey No.440/1 of Ottasekaramangalam Kani lands, Neyyattinkarai Taluk.

Remarks.—There are no private or public rights within the reserve.

VII.	Name of Block	Pechiparai Block II (*b*).
	Village	Thirparappu.
	Taluk	Kulkulam.
	Division	Padmanabhapuram.
	Extent	10 acres 50 cents.

Situation.—This block is situated south-west of Block II (*a*) mentioned above and between the Kodayar river and the left bank channel and comprises survey Nos. 2818/12 and 13 and 25 to 30, 2815, and portions of survey Nos. 2818/14 and 24 of Thirparappu village, Kalkulam taluk.

VIII.	Name of Blcok	Pechiparai Block III (*a*).
	Village	Thirparappu.
	Taluk	Kalkulam.
	Division	Padmanabhapuram.
	Extent	185 acres 20 cents.

Situation.—This block lies east of block II (*a*) mentioned above, between the left bank channel and the Pechiparai-Kulasekaram road and comprises a major portion of suvery number 2818/81 of Thirparappu village, Kalkulam taluk.

IX.	Name of Block	Pechiparai Block III (*b*).
	Village	Thirparappu.
	Taluk	Kalkulam.
	Division	Padmanabhapuram.
	Extent	165 acres 34 cents.
X.	Name of Reserve	Therkkumalai (West).
	Revenue Division	Padmanabhapuram.
	Taluk	Thovala and Agastheswaram.
	Village	Thovala, Marungur, Therur and Kulasekarapuram.
	Area	About 3½ squire miles.

Situation.—South-east of the Nagercoil-Aramboli road between 47th or 50th mile stones.

Remarks.—The following are the private and public rights admitted within the reserved forest :—

I. List of buildings within the reserve :—

(*a*) Police station with well and Police quarters Edamalai pass situated on the path from Marungur to Pazhayur. The above building with a spare of 22 yards right round will be demarcated out.

(*b*) Sasthankoil building on the above path and close to (*a*) with a space of 3 chains by 2 chains by 2 chains on the eastern side of the temple including a Vazhambalam (rest house) and of 22 yards on each of the other sides for the use of the temple.

(*c*) Excise station on the Nari-thondu on the path from Marungur to Karunkulam. A spare of 22 yards will be demarcated out right round the building.

(ii) List of rights of way within the Reserve :—

(*a*) A 20' path way known as Edamalai path from Marungur to Pazhayur enters the reserve at the south-east corner of survey No. 266 of Marungur village between cairns No. 110 and 109 and after nearing eastwards through it for a distance of 14½ chains leaves it to enter the Therkkumalai Reserved Forest.

(*b*) A 6' path from Marungur to Karunkulam known as Narithondu path enters the Reserve on the boundary line between cairn Nos. 141 and 140 and after nearing in on easterly and south-easterly direction for about 10 chains enters the Therkkumalai Reserved Forests.

XI. Name of Reserve	..	No. 39, Therkkumalai Reserved Forest (Estate)
Revenue Division		Padmanabhapuram
Taluks	..	Thovala and Agastheeswaram
Village	..	Thovala and Marungur villages
Area	..	4 Sq. Miles 375 acres.

Situation.—The block lies about a mile south-east Aramboly and west of Pazhavur and Karunkulam villages.

Remarks.—The following are the public rights now admitted within the Reserved Forest.

(i) List of temples :—

(*a*) Rochidian Sasthankoil with a well situatd on the eastern boundary in the triangular bit between cairn Nos. 43 to 46 and 47 having an extent of 37 cents is demarcated by 10 boundary.

(*b*) Rochudan Subramaniyasamy temple situated on the eastern boundary between cairns Nos. 47 and 49, but about 2 1/2 chains south-west of cairn 47 and the above Sasthan having an extent of 40 cents and demarcated by a 10' boundary. The above two temples are generlly worshipped by the villagers of Nanjanad Pidagai of this State and of neighbouring villages of Nanguneri taluk, Tirunelveli district.

(ii) List of Rights of way :—

(*a*) The 20' path known as Edamalai path that comes from Marungur through the Therkkumalai Reserved Forest West vide (*a*) under "List of rights of way" admitted within that reserve and published in the Gazette on 31st December 1086 passes through this reserve in an easterly direction for a distance of about 3½ chains and goes to Pazhavur between cairn Nos. 186 and 187.

(*b*) The 6' path from Marungur to Karunkulam known as "Narithondu path" that comes through the Therkkumalai (west) vide (*b*) under "List of Rights of way" admitted within that reserve and published in the Gazette on 31st December 1086 passes through this reserve in a southernlv and south-easternly direction for a distance of about 5 chains and goes out between cairn Nos. 262 and 263.

XII. Name of Reserve	...	Thadagamalai Reserve
Revenue Division	...	Padmanabhapuram
Taluk	..	Thovala
Village	...	Ananthapuram
Area	..	2 Sq. Miles. 387 acres.

Situation.—West of Poigaimalai Reserve and South of Ananthapuram cultivations.

Remarks.—The following are the rights admitted within the Reserve during the Forest Settlement.

(i) *Private Rights* : Particulars of private rights over lands are given under :—

Taluk.	*Village.*	*Survey No.*	*Extent in acres.*	*Name of owners.*
(1)	(2)	(3)	(4)	(5)
Thovala ..	Ananthapuram	2455	0.15	Omayamma Valliamma of Azhagiapandiapuram.
		2463	1.27	Srinivasan Raman Sampicathayar of Machina Gramom, South Canara.
		2453	0.25	Do.

(ii) *Public Rights* : Particulars of the public rights of way etc., are described below :—

(i) Pathways within the proposed reserves :—

(*a*) A footpath from Aramboli to Kadukarai viza., Kidanila Distance of the path within the Reserve is 177 chains width of the path is 4'.

(*b*) Chempakaramanputhur-Kidavila path. Distance of the path within the reserve is 57 chains ; width is 4'.

(*c*) Kosamalai-Kidavila path : Distance of the path within the reserve is 14 chains ; width is 4'.

(*d*) Kidavila-Erappu path : Distance of the path within the reserve is 123 chains ; width is 4'.

(*e*) The foot path leading to survey No. 2453, 2455 and 2463 within the reserve ; Distance of the path within the reserve is 57 chains ; width 4'.

(ii) Kidavila Sasthankoil and spring :

Northern limits of the temple ..	1 chain
Eastern ..	1 chain from the path
Southern ..	Path from Aramboli to Kadukarai
Western ..	1 chain from the path
Area of temple including premises ...	15 cents.

XIII. Name of Reserve ..	Velimalai
Revenue Division ..	Padmanabhapuram
Taluk ..	Kalkulam and Thovala
Village ..	Hills of Ponmana and Kottanallur and Hills of Arumanallur, Darsanamcope and Chiramadam.
Probable extent	5 Sq. miles 4 acres.

Situation : The block forms the north-east portion of the Velimalai Hills and is surrounded by the cultivation limit of Kottanallur, Ponmana Arimanallur, Darsanamcope and Chiramadam villages.

Remarks: The following are the rights adimitted within reserve during forest settlement:—

(i) *Private rights* : Particulars of private rights over lands are given hereunder :

Taluk.	*Village.*	*Survey No.*	*Extent.*	*Name of owners.*
(1)	(2)	(3)	(4)	(5)
			cents.	
Thovala	Chiramadam	1335	37	Anantham Nelica Pillai of Chiramadam.
		1336	61	
		1337	46	Dharmapuram Madam.
		1338	67	
		1339	57	

(ii) *Public Right :*

(*a*) The use of water by the public from tank in Survey No. 1334 of Chiramadam village Covering 74 cents is admitted.

N.B.—The area comprising the above survey Nos. 1334 to 1339 are excluded from the reserve by cutting a ring boundary with 13 cairns.

Pathways admitted within the Reserve :

(*b*) Path to the northern slope of Velimalai viz.,

Vampumulakonam. Distance within the reserve	..	92 Chains
Width	..	3 feet

N.B.—This path also gives across to the enclosures. (Private lands mentioned above.)

(*c*) Path to Perunchilambu viz., Vampumulakonam, Kolathuvilai and Nervazhithoppu.

Distance of the path within the Reserve	..	42 Chains
Width	..	3 feet

(*d*) Path to Kozhikindi Irakkam viz. Vampumulakonam.

Distance of the path within the Reserve		33 Chains
Width	..	3 feet

XIV. Name of Reserve	..	Kilamalai.
Taluk	..	Neyattinkarai and Vilavancode.
Provarthi and village	..	Periangadavilla, Arumana, Kaliel and Keemathucoil Adigracams, Peringadavilla and Ottasegaramangalam Manis.
Probable extent	..	41 Sq. Miles 4 55 acres (including Coffee and Tea Estates added to the Reserve by purchase or otherwise).

Remarks : All tea **and** coffee estates (not abandoned) are excluded from the reserve. No public or private rights within the reserve.

XV. Name of Reserve	..	No. 31, Veerapuli
Taluk Provarthi in which the land is situated	..	Thovla taluk, Azhagiapandiapuram Pidagai and village Ananthapuram Pidagai and village, Nardupidaka, Arumanallur village, Kalkulami taluk, Thiruvattar Adhigaram Thirparappu village, Ponmana Adhigaram and village, Vilavancode taluk, Kaliel Adhigaram and village.
Probable extent	..	85 Sq. Miles — 5400 acres (obtained from acquisition of tea and coffee estates by purchase or otherwise).

Remarks : No public or private rights admitted in the reserve.

XVI. Name of Reserve ..	Kulasekaram (Subsequently included in the Veerapuli Reserve).
Taluk and village in which the land is situated.	Thovala taluk, Azhagiapandiapuram, Pidagai and village, Ananthapuram Pidagai and village, Nadu Pidagai, Anumanallur village, Kalkulam taluk, Thiruvattar Adhigaram, Thirparappu village, Ponmana Adhigaram and village, Vilavancode taluk, Kaliel Adhigaram and village.
Extent ..	8½ Sq. miles.

Remarks : No public or private rights in this reserve.

XVII. Name of Reserve ..	Mahendragiri.
Taluk and Provarthies in which land is situated.	Thovala taluk, Ananthapuram Pidagai.
Extent ..	16 Sq. miles..

S. No.	*Nature of land.*	*Survey No.*	*Extent*		*Name of claimants.*
			Acres.	*Cents.*	
1.	Purayedom	..	49	96¼	Ramasuramania Iyer, Shengam Iyer, Kulathoora Iyer. of Rajakamangalam, Tirunelveli district.
2.	do		11	36	Pheminca Bibi Ammal, Aanagudi.
3.	do		2	62	Subramania Nadar, Kumarasami Nadar of North Valliyoor.
4.	do		3	45½	Achi Bibi of Ponagudi agent of Kapswamial.

List of claims subsequently admitted.

5.	do		31	28¾	Coloomai Sahib, mortgage right for Ri Ranga Iyer, Examiner Central Accounts Audit Officer, Trivandrum.

Remarks:—These claims admitted by the Forest Settlement Officer will either be assumed by Government for the Forest Department or excluded or cut out as determined by the Conservator of Forests.

Other Enclosures.

I. Name of Block—Portion of Veerapuli Reserve handed over to the P.W.D. for the construction of the Dam at Perunchani.

Revenue District—Trivandrum.

Taluk—Kalkulam.

Pakuthy—Ponmanai.

Survey—Unsurveyed hills of Ponmanai Pakuthy.

Extent—82.50 acres.

Situation.—The block is situated to the north and east of survey No. 3085 of Ponmanai pakuthy and on either side of the Paraliar and the Ponmanai-Kalikesam road between 1st and 2nd mile stone and comprise a portion of the unsurveyed hill of Ponmanai pakuthy, Kalkulam Taluk.

II. Name of Block—Portion of Veerapuli Reserved Forest at Othakadai set-apart for the market now hold there.

Revenue Division.— Padmanabhapuram.

Taluks—Thovala and Kalkulam.

Village—Arumanalur and Ponmanai (Hill portions).

Extent—2 acres 50 cents.

Situation.—The area lies on either side of the Nagercoil—Balamore road about 2 1/2 chain north of the bridge over the masipatti river on the said road and comprices small portion survey Nos. 3074 of Ponmanai village and 1071 and 1069 of Arumanallur village (Hill portions

III. Name of the Block—Portion of Velimalai Reserved Forest set-apart for the Mukkadal Reservoir.

Revenue Division—Trivandrum.
Taluk—Thovalai.
Pakuthy—No. 7, Chiramadam.
Survey Nos.—1612, 1613, 1614 and 1615.

	S. No.	*Acres.*	*Cents.*
		...	---
Area ; Block I	1612	8	55
II	1613	13	52
III	1614	1	85
IV	1615	5	65
	Total ..	29	57

Situation.—These 4 Blocks lie more or less north and west of the eastern Dam now under construction for the Reservoir at Mukkadal and are situated adjacent to the southern boundary of the Velimalai Reserve for about 2½ to 3 miles west of the 7th mile Balamore road near Thittivilai and about 2 to 5 furlongs west of the 7th mile stone of the Anandanar Channel.

IV. Name of Block—Portion of Poigaimalai Reserved Forest in Mahendragiri Range for construction of Dam.

Taluk.—Thovala Hill Portions.
Revenue Division—Padmanabhapuram.
Area—4 acres 67 cents.

Situation.—A plot at Kolunthuvilai between the Erappayar and the poigayar within the poigaimalai Reserved Forest a little of its western boundary.

V. Name of land—A portion of Veerapuli Reserved Forest now separately surveyed and numbered as 1080 and 1081 of Arumanallur Pakuthy (for colonisation and cultivation).

Revenue Division—Trivandrum.
Taluk—Thovala.
Village—No. 9, Arumanallur Hills.
Extent—319.65 acres.

Situation.—The land is situated to the west of Thadikarankonam—Balamore road between 14th and 15th mile stones about 2 miles south of Othakadai market and comprises new survey Nos. 1080 and 1081 of Arumanallur Pakuthy, Thovala taluk.

APPENDIX V.

RULES FOR THE SALE OF WASTE LANDS ON THE TRAVANCORE HILLS FOR COFFEE OR TEA CULTIVATION.

Under section 7 of the Regulation III of 1970 the following Rules for the sale of Government Lands on the Travancore Hills for Coffee or Tea cultivation are passed by the Government of his Higheness the Maharaja, under date the 25th February 1923/13th Kumbhom 1098.

1. Government land, in which no rights or private prperietorship or exclusive occupancy exist, and which mav not be reserved as hereinafter provided, may until further notice, be sold under the following rules.

2. Every application for land shall be addressed to the Peishar of the Division in which the land is situated, and shall contain the following particulars :—

(a) the estimate area of the lot applied for, and

(b) the situation of the lot and its boundaries, as can be stated.

The application shall also be accompanied by a sketch of the land applied for.

3. No lot shall ordinarily exceed 500 acres, But a person may apply for several continuous lots, each not exceeding the above limit.

4. Evety lot shall, as far as possible, be compact and shall ordinarily include no more than one tract of land capable of being surrounded by a ring, fence, and when the lost touches a public road, navigable river, canal or backwater, the length of the road or water frontage shall not ordinarly exceed one half of the depth of the lot, and in all other cases the blocks shall be so laid out that as far as practicable, their length shall not exceed half their depth.

5. No lot shall be sold until it has been demarcated with durable boundary mark and surveyed.

6. On receipt of an application under Rule 2, the Peishkar of the Division shall ascertain whether the lot applied for is available for sale. He should also enquire into the antecedents and financial position of the applicant and satisfy himself that the application is bonafide, that it comes from a person of competence and that it is not made for purpose of speculation. He should then forward the application along with his views thereon to Government. This report should clearly state the result of his enquiry on the points mentioned in this Rule.

7. If on receipt of an application under Rule 2 or of a report under rule 6, the Government have reason to believe that the lot applied for is saleable under these Rules, the appplicant will be called upon to give security, not exceeding th e estimated cost of the demarcation and survey by deposit of cash or otherwise, as may be deemed necessary and sufficient, unless the land has been already demarcated and surveyed. A deposit paid as above required will be refunded at the sale under Rule 14.

8. If the applicant fails to furnish security under Rule 7 within six weeks from the date o demand, his application shall be null and void.

9. On receipt of the security required under Rule 7, Government will, as soon as possible cause the land applied for, to be demarcated and surveyed. They shall then publish a notice calling upon all persons who may have any objection to the registry of the land or who have any claim to the land to appear before the Tahsildar concerned within 30 days of the publication of the notice and prefer their objections or claims if any. The notice shall be published by affixing copies in a conspicuous part in the Taluk and Village Officers. They shall in accordance with the provision contained this Rule also cause a notice issued by the Tahsildar to the owners of the adojoining registered lands calling up them to state their objections if any, to the registry within the time mentioned in the notice.

(1) Every such notice shall be authenticated by the signature of the Tahsildar.

(2) The notice shall be served on the owner personally by delivering or tendering a copy thereof or in his absence, upon any agent authorised to accept the service, or delivered or tendered to any adult, male member of the family at the owner's usual place of abode, or business,

(3) When a notice is served under sub-rule (2) the Officer serving it shall require the signature of the person to whom the copy is so delivered or tendered to an acknowlegement of service endoresed on the original notice.

(4) If no person mentioned in Sub-rule (2) can be found or if such persons refuse to sign the acknowledgement, the serving officer shall affix a copy of the notice in some conspicuous part of the owner's place of abode or business.

(5) The serving officer shall endorse on the original notice the time when and the manner in which the notice was served.

(6) When a notice is returned under sub rule (4) the Tahsildar shall after examining the serving officer, on both touching the proceedings, declare that the notice has been duly served, or order such service as he thinks fit.

(7) If the Tahsildar is of opinion that a notice cannot conveniently be served by a serving officer, the notice may be sent by Anchal or Post in a registered covered addressed to the owner's place of abode or business.

9A. Claims of private proprietorship, of or exclusive occupancy, or of any right affecting the sale of the land under the rules shall be disposed of under the provisions of Regulation III of 1097.

9-B. In the case of a private sale, the purchase price per acre shall be arrived at by negotiation and on approval by the Government, such price shall, subject to the provisions of Rule 19, be paid in full by the purchaser within a time to be fixed in the written notice issued to himcalling upon him to pay up the same. The rate to be so fixed shall in one case be below the upset price of British Rupees (40) forty per acre prescribed in Rule 14 of the Rules.

10. The advertisement, in case the land is to be sold by public auction, shall be in Englis- and Malayalam, and it shall specify the locality extent and boundaries of the lot, the annual assessment, and the place, time and and conditions of the sale. It shall ordinarily be posted for three months on the land itself, as well as in the neighbouring villages and in the offices of the Division Peishkar and the Tahsildar of the Taluk. Government will, at their discretion, fix the time and the place of auction and nominate the officer by whom the auction is to be conducted and may alter all or any of them, if necessary, provided that not less than 14 days notice shall ordinarily be given of every such alteration and the land shall ordinarily be sold until it has been advertised as aforesaid for three full months. A notification of the intended sale will also be inserted in the Travancore Government Gazette.

11. The Division Peishkar shall send a written notice of the place and time of sale, as also any alteration under the provision of Rule 10 to the applicant, but no party shall have the right to have the sale cancelled in consequence of the non-appearance of the applicant.

12. An applicant withdrawing his application prior to the sale of the lot will be entitled to the refund of so much only of his deposit where deposit has been paid by him under Rule 7 as may not have been expended. Where no deposit has been paid, he will still be liable to make good any expense which the Government may have incurred in consequence of his application and its withdrawal.

13. On the withdrawal of an applicant it shall be discretional with the Government to proceed with the sale of the klot or not, as they consider best in the public interest.

14. The unset price will be British Rupees (40) forty per acre, which will include all survey expenses. If the original applicant (who may have paid the deposit) be the purchaser, he shall receive credit for his deposit in payment. Otherwise the amount of the deposit shall be paid to him from the sale proceeds.

15. Lands shall be disposed of under these rules, either by public auction or by private arrangement, if before it is disposed of, no claim of private proprietorship, or of exclusive occupancy or of any other right incompatible with such disposition be preferred.

When land is sold by public auction, the sale shall be conducted under and subject to the following conditions :

(1) The highest bidder above the upset price shall be the purchaser of the lot and if any dispute arises between two or more bidders at the same price, the lot shall be immediately put up again at the last preceding undisputed bidding and resold.

(2) The person declared to be the purchaser, shall pay immediately after such declaration a deposit of 10 percent on the amount of his purchase money, to the officer conducting the sale and if default of such deposit, the property shall forthwith be put up to auction and sold and he defaulting bidders shall be liable for the deficiency if any, in the price that may be secured at he resale.

(3) The full amount of the purchase money shall, subject to the provisions of rule 19, be paid by the purchaser before the officer closes on the 60th day after the sale of the property exclusive of such day or if the 60th day be a Sunday or other holiday then on the first office day after the holiday.

(4) If the purchase money, viz., tharavila and thadivala amounting to Rs. 5,000 or below be not paid within 60 days from the day of the sale, the purchaser shall pay the same to Government within 6 months from the date of sale with interest at the rate of 6 per cent per annum on on the remainder of the purchase money, from the date of sale to the date of payment.

(5) If the purchase money, viz., thadivila or tharavila amounting to British Rs. 5,000 or below be not paid within 6 months from the date of sale, the deposit after defraying the expenses of the sale shall be forfeited to Government, the property shall be resold either by public auction or by private contract and the defraying purchasers shall be liable for deficiency of price, if any, resulting from such sale.

(6) In case of resale, under (2) or (5) the, defaulting purchaser shall forfeit all claims to the property or to any part of the sums for which it may be subsequently sold. The deficiency, if any arising from such resale together with all expenses attending it, shall be recovered from the purchaser as if the same were arrears of land revenue under Regulation I of 1068.

(7) If the purchaser shall pay to the Government the residue of his purchase money he shall thereupon be placed in possession of the lot pending the issue of the title deed.

(8) All person desirous of purchasing the waste lands notified to be sold in auction shall before taking part in such auction satisfy themselves as to identity, correct description measurements, boundaries, fitness for cultivation etc., of such lands. A person, whose bid is accepted shall thereafter be precluded from backing out of the contract which becomes thereby completed on any ground whatsoever.

16. The land sold under these rules shall bear an annual assessment of one British Rupee per acre and it shall be regulated as follows :—

(*a*) If the land sold under these rules is wholly unoccupied on the date of completion of the sale ; it shall be free of assessment for the first 3 years on condition that at least a quarter of it is cleared and planted within the first two years, falling which the whole of the assessment for three years shall be levied in the third years.

(*b*) If the land sold under these rules is wholly occupied on the date of completion of the sale, it shall, in case the cooccupation is with the permission of the Government bear from date of such occupation one-third of the full assessment for the first two years, two-third of the full assessment for the third and fourth years and full assessment for the fifth and every subsequent year and in case the occupation was without the permission of Government, bear full assessment from the date of occupation.

(*c*) If the land sold under these rules is occupied in part of the date of completion of the sale, it shall bear, in case the occupation is with the permission of the Government, assessment in regard to the occupied area in accordance with the rule laid down in clause (*b*) in reference to wholly occupied lands and in regard to the area unoccupied in accordance with the rule laid down clause (*a*) in reference to wholly unoccupied lands.

(*d*) If the land sold under these rules is occupied in part on the date of the completion of the sale and such occupation is without the permission of Government it shall bear full assessment on the occupied portion from the date of such occupation. The assessment on the unoccupied portion shall however be in accordance with the rule laid down in clause (*a*).

17. Reserves of grazing and forest land, or land for the growth of firewood, for building sites, for the growth of timber etc., or required for any other specialpurpose, are not be sold under these rules without the special sanction of Government.

18. As soon as the land has been purchased, a grant shall be made to the purchaser in the Form appended to these rules provided he shall have paid his purchase money in full.

9. The whole of the dues mentioned in Rule 18 shall ordinarily be recovered in one lump. In cases however where the amount of tharavila and thadivila together, due by a single assignee, exceeds British Rs. 5,000 the same may at the discretion of Government be allowed to be paid in five equal yearly instalments. This concession will be allowed only to the subject of His Highness the Maha Raja. In cases where payment by instalments is allowed, the title deed shall be issued after all the instalments are paid.

19-A. In every case in which the dues are allowed to be paid in instalments, the assignment will be subject to the following conditions, viz :—

(*a*) Till all the instalments are paid the property in the lands assigned shall be vest in the Government.

(*b*) If the assignee defaults to pay any instalments, the Government may either (i) cancel the registry in which case the instalment or instalments already paid by the assignee shall be liable to be forfeited to Government or (ii)direct the recovery of the whole of the unpaid purchase money from the assignee under the Revenue Recovery Regulation in force for the time being.

In every case in which the dues are allowed to be paid instalments an agreement shall be taken from the assignee embodying the above conditions.

19-B. The expense of making out, executing, and registering the grant shall be met by the grantee and such expenses when they have been met in the first instance by Government shall be recoverable from him under revenue recovery regulation as land revenue due on the land covered by the grant.

20. Arrears of annual assessment on the lands sold shall be recoverable in the same manner as arrears of ordinary land revenue under the Revenue Recovery Regulation for the time being in force.

21. Land sold under these rules shall continue subject to all general taxes or local rates payable by law or custom at the time of the sale, or which may thereafter become to payable.

22. Land sold under these Rules shall be held in perpetuity as heritable or transferable property but every case of transfer shall be made known to Government who shall have the right apportioning the tax if a portion of the holding is transferred.

23. The existing and customary rights of the Government or other properietors, and of the public in existing roads and paths and in streams running through or bounding lands sold under these rules are reserved, and in no way shall they be affected by the sale of such lands under these Rules.

24. Nothing contained in these rules shall be held to debat the Government from granting Government lands on patta cowle, or otherwise at their discretion as here to for.

25. If any portion of the lands, granted under these Rules, is cultivated with cardamoms rubber or other special products liable to a higher tax than that payable under these Rules, it will be open to Government to impose on that portion, such higher rates of assessment as may be applicable to lands granted for the cultivation of such produce. In the case of lands of favourably assessed tenures, the enhancement to be made shall be at the proportion which the net assessment bears to the total assessment on the lands.

26-A. The full proprietorship of all Royaltrees, viz., Teak, Blackwood, Embony or Karunthaly, and Sandalwood within the grant vests in the Government. The number and description of such trees shall be entered in the schedule attached to the title deed for the land and the grantee shall be bound to take care of the trees until they are removed or otherwise disposed of by the Government. In regard to Reserved trees, the grantee shall pay their value at such rate, per acre of the wooded area of the grant, as may, from time, to time tobe fixed by Government and on such payment the absolute right over all reserved trees on the grant will vest in the grantee.

Explanation.—The term ' Wooded area ' used in this rule mean and includes :—

(i) all evergreen forests ; and

(ii) deciduous forests, including what are knwon as park lands, i.e., grass lands which contain not less than 30 reserved trees per acre, of all species having a girth measurement of 40 inches and above, measured at a height of 4 feet from the ground.

A schedule of reserved trees is appended to these rules.

Note.—Evergreen forests are areas with a close canopy wity little or no grassy undergrowth, while deciduous forests have an open canopy, i.e., have trees scattered all through with usually an undergrowth of grass. All evergreen forests will be treated as wooded for purposes of this rule. In some of the evergreen forests, Eta and Bamboos may occur sometimes intermixed with trees, and in such cases, no differencentiation between the two is possible and the whole area will be taken as wooded. In the deciduous forest Eta is usually absent, but Eta areas may sometimes be found in hollows containing no tree growth. Such Eta areas will not be treated as wooded.

On the other hand, bamboos may be found intermingled with trees ; nevertheless such areas will be treated as wooded provided that they contain the number of reserved trees of the dimensions specified in sub-clause (2) above. Often times Eta and Bamboos are found in pure patches of fairly large extent in hollwos and along the margin of streams and rivers andthose areas will be taken as nonwooded, if they do not contain the number of reserved trees of the dimensions specified above.

26-B. The determination and measurement of the wooded area of each grant will be made by the Divisional Forest Officer having local jurisdiction and the disputes if any, between the Divisional Forest Officers and the grantee, in such determination or measurements, shall be settled by the Conservator of Forests whose decision shall be final. The value of reserved trees thus assessed will be recovered by the Forest Department and credited to Forest revenue.

27. The banks of streams or rivers containing forest trees to the extent of 50 yards on each side, and the crests of hills to the extent of a quarter of a mile on each side, will not be assigned for cultivation.

28. The grantee shall, on or before the last day of May every year, give notice to the Tahsildar having jurisdiction of all lands planted by the grantee during the current Malabar year with cardamoms or rubber and tea, or any other cultivation liable to an enhanced assessment, and shall specify in even such notice the number of acres of land so planted and the place or places where the same are situated. Provided always that the Government shall be at liberty, at any time to make any arrangement that they may consider necessary to ascertain for themselves the correct extent of land so planted or liable to any of the hereinbefore mentioned taxes and that the expense of such arrangements shall be borne by the grantee. Provided further that, if the grantee fail to give any such notice to the Tahsildar on or before the last day of May every year hereinbefore required, the grantee shall be liable to pay a prohibitory tax of 5 times the assessment leviable on such plantation from the last day on which such notice ought to have been given.

SCHEDULE.

Reserved Trees.

Number of Vernacular name.	*Botanical name.*
(1)	(2)
1 Anjili or Ayani	Artocarpus Hirsuta
2 Thumbagom or Kongu	Hopea parviflora
3 Vengai	Pterocarpus marsupium
4 Edakorani or Pathiri	Stereospermum exylacarpum
5 Thembavu or Karimaruthu	Terminalia tomentosa
6 White cedar or Agil	Dysoxylum malabaricum
7 Irul or Kadamaram	Xylia dolabriformis
8 Venteak	Lagerstroemia lanceolata
9 Punnappa	Calophyllum tomentosum
10 Cheruppunna	Calophyllum wightiannum
11 Red Cedar or Mathagirivembu or Thevatharam.	Cedrela toona
12 Vaga	Alibizzia lebbek
13 Karintnagara or Velvaga	Albizzia procera
14 Karivagai	Albizzia ordoratissima
15 Myla	Vitex altissima
16 Manjakdambai	Adina cordifolia
17 Manimaruthi	Lagerstroemia flosreginae
18 Puvan	Schlechera trijiga
19 Mulluvengai	Bridelia retusa
20 Maruthu	Terminalia paniculata
21 Unnam or Chadicha	Grewia tiliaefolia
22 Vekkali or Marukanjiram	Anogeissus latifolia
23 Venkotta	Lophopetalum wightianum

SCHEDULES

Reserved Trees.

Number of Vernacular name. (1)	*Botanical name.* (2)
24 Kadukkay	Terminalia chebula
25 Nangu	Messua ferrea
26 Pine (White dammer)	Veteria indica
27 Puvarasam	Thespesia Populne
28 Chokkala	Aglaia roxburahiana
29 Mayu	Mangifera indica
30 Puli	Tamarindus indica
31 Iuvpai	Bassia longifolia
32 Pasakotta	Sapindus trifoliatas
33 Thelia (Black dammer)	Canarium strictum
34 Morala	Buchanania latifolia
35 Kolabu	Hardwickia pinnatta
36 Mattipal	Ailanthus malabaricam
37 Kanjiram	Strychnos nuxvomica
38 Puthangali	Poeciloneuron indicum
39 Karanjili	Dipterocarpus bourdilloni
40 Vellaini	Dipterocarpus indicus
41 Malaveppu	Chuckrasia tabularis
42 Shenkuranthi	Gluta travancorica
43 Pompathiri	Stereospermum chelonoides
44 Karuva	Cinnamomum zeylanicum
45 Ila pongu	Hopea wightiana
46 Konnai	Cassia fistula
47 Nedunar	Polyalthia fragrans
48 Naval	Eugenia jambolana
49 Nir-naval	Eugenia gardneri
50 Chavaran	Eugenia jambolana
51 Karivelam	Aeacia arabica
52 Parambai	Prospopis spicigera
53 Kadapla or Palumorah	Kurrmia biparita
54 Ningal or Nirolia	Filicium decipiens
55 Kuranjun	Acrocarpus fraxinifolius
56 Vedapala or Karaini	Cullenia excelsa
57 Mannal or Tirippu	Bischofia javanica
58 Acha	Hardwickia pinnata
59 Vaimaram	Chloroxylon swietenia
60 Kungiliam	Shoria talura
61 Elava	Bombax malabaricum
62 Cheeni	Tertrameles nudiflora
63 Malavuram	Pterospermum rubiginosum

TITLE DEED—NUMBER

Know all men by these Presents that, Chief Secretary to the Government of Travancore, on behalf of the Travancore Government, has hereby this day being the day of in the year granted under the Rules for the sale of Government His Highness the Maha Raja, under the date the 25th February 1923 to Heirs, executors, Administrators and Assigns, for coffee or tea cultivation, in consideration of the purchase money of the sun of British Rs. paid to the Travancore Government by the said the tract of and measuring bounded as mentioned in the Schedule hereunder written, and delineated in the map hereto annexed, to be holden by the Grantee subject to the following conditions:—

First.—A tax of one British Rupee shall be payable to the Government annually on every acre of land sold, and such tax shall be the first charge of the land; the Government retains the power to revise the rate of tax, provided that no increase of the asessment of these lands will be made except in concurrence with the general revision of the assessment in the Travancore State; and provided further that, if any portion of the lands granted under these Rules is cultivated with cardamoms or rubber on other produce it will be open to the Government to impose on that portion such rates of special assessment as may be applicants to the lands granted for the cultivation of such products.

Second.—The aforesaid tax is payable, in one sum to the Thasildar of the taluk on or before the thirty first day of May of each year, without a formal demand from the Tahsildar.

Third.—Arrears of assessment or tax shall be treated and recovered in the same manner as arrears of ordinary land revenue under the Revenue Recovery Regulation for the time being in force.

Fourth.—The grantee shall maintain permanent boundary made around grant and keep them in good repair on failure of which after due notice, it shall be competent to the Government to cause such marks, as it may deem necessary to be put up, and to levy the cost of the same with all expenses attendant thereon in the manner provided for the realisation of arrears of public revenue due on land.

Fifth.—The full right to Royal trees within the grant is reserved and continues to vest in the Government. The grantee shall be bound to take care of the royal trees particularised in column 5 of the schedule hereunder written until they are removed or otherwise disposed of by Government. The grantee shall also be bound to deliver to the Government all ivory found and other royalties produced inthe land and all captured elephants and will be paid the regulated price for the articles of produce and the regulated reward for the elephants at the discretion of the Government. (Amended by Government Notification Dis. No. 173/2A/Rev, dated 2nd February 1924).

Sixth.—All established rights of way shall be respected by the grantee and such ways shall be at least twenty one feet wide. It is to be considered that there is a natural right of way through the land when such is necessary in order to render the neighbouring land available.

Seventh.—No exclusive right of water beyond what is necessary for use of the plantation shall be considered to be conveyed by the grant. All rights over all water power are reserved to vest in the Government.

Eighth.—Should the Government have occasion to take up any portion of the land sold for the purpose of constructing roads, channels or other public works, due compensation shall be paid.

Ninth.—The land will be free of assessment for three years on condition that a quarter of it shall be cleared and planted within the first two years, failing which the whole of the assessment shall be levied in the third year or in other words, the assessment will be levied from the date of completion of sale, namely the . . . . .

Tenth.—The grantee shall, as a most important condition of the grant, always use best exertions to prevent the produce ofthe grant being exported, except on payment of the regulated duty at the Customs Houses, and to prevent smuggling of articles of Government monopoly and to prevent criminals in general obtaining any kind of protection on the Estate;

Eleventh.—The land granted shall be held in perpetuity as heritable or transferable property, but every case of transfer of the grant by the Grantee shall be immediately made known to the Government who shall have the right of apportioning the tax if a portion of the holding is transferred.

Twelth—All rights in mines, metals and minerals are reserved to and continue to vest in the Government. The discovery of all mines and treasures within the limits of grant shall be immediately communicated to the Government.

The disposal of treasure discovered in the land granted will be regulated by the Treasure Trove Regulation III of 1034.

Thirteenth—The produce of lands held under the grant will be liable to duty on export in common with other like produce exported from the State.

Fourteenth—The liablity of the lands herein specified to Municipal, General or local Taxes is not prejudicially affected by this grant.

Fifteenth—The grantee shall on or before the last day of May every year, give notice (to the Tahsildar having jurisdiction) of oll lands planted by the Grantee during the current Malabar year with cardamoms or rubber, or rubber and tea or any other produce liable to enhanced assessment, and shall specify in every such notice the number of acres of land so planted and the place or places were the same are situated. Provided always that Government shall be at liberty at any time to make any arrangement they may consider necessary to ascertain for themselves the correct extent of land so planted or liable to any of the herein before mentioned tax and that the expenses of such arrangements shall be borne by the Grantee. Provided further that if the grantee fail to give any such notice to the Tahsildar on or before the last day on which such notice ought to have been given.

Sixteenth—All sums of money due or alleged to be due to the Government from the Grantee under the grant shall be recoverable in the manner prescribed by the provisions of the Revenue Recovery Regulation for the time being in force.

Seventeenth—The terms Grantee in these presents shall besides the said grantee include also his heirs, executors, administrators and assigns.

Schedule Annexed to the Deed No.

Numbur of grant	*Situation*	*Name and boundaries.*	*Area in acres*	*Number and destcription of royal trees.*
(1)	(2)	(3)	(4)	(5)

Signed, Sealed and Delivered at
Trivandrum on the date and
in the year above mentioned
in the presence of:—

Chief Secretary to the Government of Travancore.

Witnesses:—

1.

2.

APPENDIX VI.

Schedule of tariff and seigniorage rates for timber and other forest produce in Kanniyakumari district.

Serial number. (1)	*Species.* (2)	*Unit.* (3)	*Tariff.* (4)		*Seigniorage.* (5)	
			RS.	P.	RS.	P.
	A. TIMBER.					
1 to 4	are all Royal tree species			..		..
5	Mahogany (Swietenia macrophylla) Round	Cft.	3	00	0	75
6	Shenkurunthi-red wood or Thodappai (Gluta travancorica)		4	00	1	50
7	Vellagil or white cedar (Dysoxylum malabaricum)		7	00	1	50
8	Kambagom or thambagom or Kongu (Hopea parviflora)		7	00	1	75
9	Angili or Ayani (Artocarpus Hirsuta)		6	00	1	50
10	Jack or Pilavu (Artocarpus untegrifolia)		4	00	1	50
11	Venga (Ptercarpus marsupium)		4	75	1	25
12	Punnoppamaram (Calophyllum tomentosum)		3	00	0	75
13	Thambavur or Karimarutha (Teriminalia to mentosa)		4	00	1	00
14	Kodapala or Kulavu (Hordwickia pinnatta)		3	25	0	81
15	Irul or Kadamârom (Xylia dolabriformis)		4	75	1	25
16	Nangu (Mesua ferrca)		3	25	1	00
17	Theetiplavu (Artocarpus Lakoocha)		3	50	0	87
18	Myla or Myellu (Vitex altissima)		4	00	1	00
19	Venteak or Velvala (Lagerstroemia lanceolata)		3	00	0	25
20	Vahai (Albizzia Lebbek)		2	50	0	50
21	Manjakadambu (Adina cordifolia)		3	00	1	00
22	Maruthi or Pillamarudu (Terminalia paniculata)		3	25	0	75
23	Mulluvenga or Mukavini (Bridelia retusa)		3	00	0	75
24	Gnavel or Naga (Eugenia jambolana)		3	00	0	75
25	Karangili or Kalphine (Dipterocarpus bourdilloni) (Dipterocarpus indicus)		3	50	0	87
26	Kattiluppa (Palaquium ellipticum)		3	25	0	81
27	Pathiri or Edangorana (Stereosermum xylocarpum)		2	50	0	50
28	Chadachi or Unnam (Crewia tiliceafolia)		3	25	0	81
29	Vakkali or (Murukanjiram Anogeissus latifolia)		2	50	0	50
30	Peikadukka (Terminalia travancorensis)		2	50	0	50
31	Meloohittivan (Bischofia javanica)		2	50	0	50
32	Kurungan or Malamkonnai (Acrocarpus fraxinifolius)		2	50	0	50
33	Karimthakara (Albizzia procera)		3	00	0	75
34	Varachy (Albizzia amara)		2	50	0	50
35	Pulivaha (Alibizzia ordoratissima)	Cft.	2	52	0	50
36	Elavu(Xombo malabaricum)		2	50	0	75
37	Cheeni (Tetrameles nudiflora)		2	50	0	75
38	Vellappyne (Vateria indica)		2	50	0	75
39	All other reserved species	Cft.	2	50		50

(1)	(2)	(3)	(4)		(5)	
			RS.	P.	RS.	P.
	B. MINOR FOREST PRODUCE.					
1	Bamboos (top) 20 cft.	Per 100	..		10	00
	Bamboos—30 ft.	100	..		12	50
	Bamboos basal—20 cft.	100	..		10	00
	Bamboos—30 ft.	100	..		12	00
	Bamboos, Compelete	100	..		20	00
	Bamboos, Chillias	100	..		2	00
	Bamboos, Thorns	Per Headload any quantity.	..		0	12
	Bamboos, Thandayams	Foot	..		0	12
	Bamboos, Flag staff	Foot	..		0	06
	Boamboos, Kambavani	Foot	..		0	12
	Bamboos, split	100	..		5	00
	Small bamboos (local moogil)	100	..		6	00
	FOR EXFORT.					
	Vahanthandu bamboos	Foot	..		0	12
	Bamboos (top) 20 ft.	100	..		15	00
	Bomboos (top), 30 ft.	100	..		18	00
	Bamboos (Basal), 20 ft.	100	..		30	00
	Bamboos, chillies	100	..		3	00
	Thadavam bamboos	Foot	..		2	19
	Flag staff bamboos	Foot	..		0	12
	Kambavani bamboos	Foot	..		0	19
	Split bamboos	100	..		0	60
	Small bamboos (Kal,moongil)	100	..		9	00
	Firewood (local consumption)	ton of 81 cft.	3	00	2	25
	Firrwood. Headlod	K			0	06
	Firewood (export),	ton of 81 cft.	12	00	4	00
	Firewood, Headload	..			0	25
	Charcoal (local consumption), ton weight	..	25	00	20	00
	Charcoal (export), ton	..	30	00	25	00
	Reeds (local consumption)	1000	..		5	00
	Reeds (local Headload of 30)	..	..			12
	Reeds (export)	Do.	..		10	00
	Reeds (spoit)	Do.	..		20	00
	Rattans (Export).					
	I Class (2½ in girth and above 12 feet long)	Per 100	..		6	00
	II Class—1" into 2½" girth-12' feet long)	100	..		4	00
	(III Class— 1" girth 12feet long Rattans (for local and Industrial purposes)	100	..		2	00

(1)	(2)	(3)	(4)	Rs. P (5)
	I Class—2½" in girth and above 12' long	160	..	3 00
	II Class —1½ to 2?" girth and 12' long	100	..	2 00
	III Class—Upto 1" girth and 12' long Rattans split (for Local and Industrial purposes).	100	..	. 00
	I Class	100	..	6 00
	II Class	100	..	3 00
	III Class	100	..	1 50
	Rattans, split (for export);—			
	I Class	100	..	12 00
	II Class	100	..	6 00
	III Class	100	..	3 00
	Kodapala oil	Tin 4 Gallons	16 00	..
	Kodapala oil	Gallon	4 00	..
	Honey (Big bees), unclarified	Edangali	3 75	..
	Honey, Clarified	Do.	4 50	..
	Honey (small bees) unclarified	Do.	7 50	
	Wax	lb.	3 00	..
	Ivory, I Class-—weighing 18 lb. and above, per tusk	lb.	15 00	..
	Ivory, II Class—weighing below 18 lb. but above 13 lb. per tusk	lb.	12 00	..
	Ivory, III Class—weighing below lb. q13 .bs. but above 7 lb. per tusk	lb.	9 00	..
	Ivory, IV Class—weighing below 7 lb.	lb.	6 00	..
10	Scrivelloes	lb.	3 00	..
11	Elephant teeth	lb.	0 12	..
12	Manjakauva	H.L. dried	..	0 12
13	Pathiripuvu	Thulam	3 00	0 50
14	Pinchal	H.L.	2 00	0 12
15	Cheevaka	H.L.	5 00	0 50
16	Nux vomica	H.L.	00	0 25
17	Turmeric	H.L.	2 00	0 19
18	Incha bark, 3 ft. x 12 in	100 polies or pieces.	2 00	0 19
19	Green ginger	H.L.	2 00	0 25
20	Vakka fibre	H.L.	..	0 50
	FOR LOCAL CONSUMPTION.			
21	Vakka drag ropes	Ropes	1 50	0 25
22	Sterculia villosa fibre	H.L.	4 00	0 50
23	Hilicteres isora fibre	H.L.	..	0 19
24	Hilicteres isora fruits	H.L	1 00	0 06
25	Green manure leaves	C.L.	..	1 00
	Do.	H.C.	..	0 06
	Do.	Boat-load	..	2 00
	Do.	Lorry-Load		1 00
	Dry manure leaves	Boat-load	..	1 00
	Do.	C.L.	..	0 50

			Rs. P.	Rs.P.
(1)	(2)	(3)	(4)	(5)
26	junglewood barks, of unclassified wood creepers, climbers etc. except Konnal and others tanning barks	M.L.	..	0 25
	edicinal roots of herbs, shrubs, weeds and plants	M.L.	..	0 25
28	Metal [granite] C. L. or 20 cft.	..	..	1 00
	Metal for P. W. D.	..	..	0 50
29	Gravel. C. L. or 20 Cft	..	..	0 25
30	Laterite C. L. or 20 Cft	..	..	0 15
31	Rubble, C. L. 20 cft	..	..	0 50
32	Earth. C. L. 30 cft	..	..	0 50
33	Para rubber seeds	1000	5 00	..
34	Cardamoms	Per Pound	5 00	..
35	Thackolam	Do.	..	0 25
36	Dammar, white and black	Do.	0 25	..
37	Karincha bark. C. L. of 90 Thulaqms		4 00	1 50
38	Walking sticks [junglewood]	100	..	1 50
39	Walking cane, with root	100	..	2 00
40	Chundaka	H. A.	..	0 06
41	Kyan stick	C.L.	..	0 57
42	Plantain leaves	H.L.	..	0 06
43	Kuva leaves	Do	..	3 06
44	Thatching grass	Do.		0 06
	Do.	C.L.	..	1 00
45	Kanakamukhu	100	..	1 20
46	Konthapana puvu	H.L.		0 06
47	Axholola	Do.		0 06
48	Pulinchikodi	Do.	..	0 06
49	Kanamoonkil	Do.	..	0 06
50	Kasthurimanjals	Do.	..	0 12
51	Channaka	Do.	..	0 12
52	Flowers fruits other than those mentioned aobve execepting those gielding dyiug and tanning materials	..	..	0 06
53	Roots other thanthose mentioned above	H.L.	..	0 06
54	Leopard skin	Per sft	2 00	..
55	Tiger skin	Do.	2 30	..
56	Bisor head with horns I Class—30" span heand above ca	Do	10 00	..
	I Class 20" to 29 3/34 span each	..	1 00	..
	II Class below 20" span	..	4 00	..

(1)	(2)	(3)	(4)	(5)
			RS. P.	RS.
57	Sambhur head, with horns, large 30" span and above	each	5 00	..
	Sambhur, head, with horns, small below, 30' span	Do.	3 00	..
58	Leopard or Panther or Cheeta teeth	Do.	0 50	..
59	Leopard or Panther or Cheeta claws	Do.	0 75	..
60	Tiger claws	Do.	0 75	..
61	Tiger teeth	Do.	1 00	..
62	Lac	1 lb.	1 00	..
	Brood lac	..	1 00	..
63	Pingu oil	Gallon	1 00	..
	Pingu fruit	H.L.	0 12	..
64	Beedi seeds	Edangali	1 00	..
65	Oil seeds	1 lb	1 00	..
66	Jungle wood posts of unreserved species of basal girth not exceeding 30" ..	each	..	0 25
67	Cherupullu (grass)	C.L.	..	0 52
	Cherupullu per changadom and 7' X 4' X4'	..	..	4 57
68	Oda leaves, 100 piddies	..	9 03	..
69	Enthapana leaves (Wild date leaves)	C.L.	..	0 34
70	Vallies	..	1 25	..
	Vallies Changadom	..	6 25	..
71	Kakkumvalli, Boat load	..	1 87	..
72	Padalakole (brushwood)	C.L.	0 62	..
	Padalakole per Changadom of 10' x 4' x 4'	..	10 00	..

Ni.:—One cart-load is equivalent to 29 cft, 20 headloads are equivalent to one cart-load.

APPENDIX VII.

Clossary of Vernacular terms in vogue in Kanniyakumari.

Chavuku theervai :—The excise duty payable on forest products when they are exported outside the State.

Karem :—The land revenue payable on lands, coffee land holdings.

Kolvila :—The cost of felling, conversion and transport to the sale depot, per cubic foot of timber.

Kudivila :—The portion of net sale proceeds of Royalties, payable to the owner of the land where the royalties stand

Kuthagaipattam :—This is the lease or assignment of Government lands to private bodies and such lease may be with or without time-limit.

Kuttikanam :—Means stump fee, and is the rate payable to the Government or to the owner of the land. This may be expressed as to much per stamp (i.e. tree) or per cft. as per set of spokes and felloes and is equated to seigniorage.

Mellabhom :—Is the price given by the purchaser for timber or forest produce collected at his own expenditure, the price being fixed by auction, tender or negotiation. This will be always more than Kuttikanam or Seigniorage hence known as Mellabhom.

Podhiyu :—Registered land as registered holding. It may be lease or assignment.

Pandaranattam :—Is a mode or assignment or leasing of land in which the Government collects both the Tharavilla (land value) and thadivilla (tree value).

Royalty :—Any of the tree species, over which Government has monopoly, wherever it grows or coccur like Teak, Rosewood, Ebony, Sandal, Ivory.

Seigniorage :—It is the fee fixed by Government at which forest produce is allowed to be removed in the forest, mostly for local consumption.

Tariff rates :—This is the rate at which Government authorises the subordinate officers to sell timber and forest produce at sale depots This will be seigniorage plus working charge plus profit. This is arrived at by averaging some past prices.

Taungya :—It is a method of regenerating forests along with agricultural crop known as Kumri method in Tamil Nadu.

Thadivila :—Value of timber standing in the land. It means tree value.

Tharavila :—The land value, i.e., when the land is assigned if the land value alone (notreet value) is realised, it is called Tharavila.

APPENDIX VIII.

RULES FOR THE TREATMENT AND MANAGEMENT OF HILLMEN, PASSED BY TRAVANCORE GOVERNMENT UNDER DATE THE 14TH DECEMBER 1911.

The term "Hillmen" in these rules means and includes only the following tribes who have been living the hills from time immemorial and does not include any others:—

1. Kanikars residing in the hills of the Southern Trivandrum and Quilon Land Revenue Divisions extending upto and inclusive of the Shendurni Valley.

Palliyars residing on the banks of the Kallada and Achenkol rivers.

Hill Pulayas of Anjanad.

2. Hillmen residing in Government Forests and Reserves shall be under the control of the Forest Department.

3. Each settlement will have a headman, who has attained that position either by hereditary right or by selection or election by the members of the settlement, in conformity with the existing practice.

Provided that when a headman fails to carry out any of the duties, as hereinafter stated, the Divisional Forest Officer may call upon the adult male members to depose him and elect another competent man to take his place.

4. Hillmen residing in Government Forests and Reserves shall have their numbers registered in the Office of each Forest Division, and for this purpose the headman of each settlement shall report to the Range Office concerned, once a year or whenever called on to do so, the name of his settlement of Kani, the number of males and females composing it, adults and children, children below three years being classed as under age.

5. No hillman can leave his settlement or Kani or Kigrate to another without the permission of his headman. Appeals from the headman's decision shall lie to the Divisional Forest Officer whose decision shall be final.

6. The settlement of hillman residing in a Government Forest or Reserve shall be permanently fixed, and they shall not be permitted to shift them from place to place, except temporarily with the special written permission of the Divisional Forest Officer in cases of scarcity of water, outbreak of epidemics, such as small pox, etc.

7. The hillmen shall enjoy the concession of cultivating land free of tax in the Government Forests and Reserves in which they live, to the extent of 5/8 of an acre per head for every member of settlement above three years of age.

(i) A compact block of land, comprising 7 times the total area required for each settlement in a year, deducting the area of wet lands permanently under cultivation, shall be demarcated by the Forest Department (the hillmen concerned providing the labour free of payment) and 1-1/7 of that area shall be cultivated in any one year so that the cultivation may be carried on permanently in that block on a rotation of seven years.

(ii) It shall be the duty of the headman to apportion the area among the several families of his settlement subject to an appeal to the Divisional Forest Officer whose decision shall be final.

(iii) In case of trespass or encroachment in a settlement, the headman shall decide such disputes, subject to an appeal to the Divisional Forest Officer whose decision shall be final.

8. No hillman shall be entitled to the grant of patta for any cultivated in a Government Forest or Reserve, however long his occupattion of such land may be.

Proviso.—The hillmen may, however be granted patta for cardamom lands in the tract set-apart for the growing of cardamoms subject to the condition that they shall not alienate such lands to any one other than among themselves.

9. All produce of the land cultivated by hillmen in accordance with the foregoing Rule shall be the property of the hillmen and may be disposed of as they think fit, except foodgrains and tobacco which shall not be sold or taken out of the Government Forest or Reserve, without the written permission of the Divisional Forest Officer.

Proviso:—The Divisional Forest Officer may delegate this power to such of his Range Officers as he thinks fit.

10. The hillmen may fell and use any timber (other than of Royal or Reserved trees) and firewood, bamboos, reeds and canes, free of charge, for their bona fide domestic and agricultural purposes and the last three, viz. bamboos, reeds and canes may be used by them in the manufacture of petty articles for sale, provided however that the Government may at any time restrict or prohibit trade or charge a fee on the produce.

11. The hillmen may collect and use, for their own consumption or for sale or for both, any minor forest produce not collected by the Government or leased by the Government to contractors or lessees, but the sale of minor forest produce for which seigniorage has been, or may hereafter be fixed by the Government, shall not be permitted.

12. The hillmen may shoot game in wet weather from the 15th Vykasi to the 30th Karthigay except such animals and birds as may be prohibited by the Government from time to time, and they may catch fish, provided that the poisoning of water or the use of dynamite or gunpowder for the purpose is not resorted to. For the purpose of this rule and for the protection of person and property, each settlement may keep one gun ordinarily in the lay down any restrictions in respect of these privileges.

Proviso :—In exceptional cases the Government may authorise more than one gun being kept in a settlement.

13. (Only licensed traders shall deal with the hillmen at theirown settlements and such licensed traders shall neither lend money, nor sell, or buy anything on credit from the hillmen).

(i) Licenses to deal with the hillmen living within the Government Forests and Reserve will be granted by the Divisional Forest Officer to respectable traders who undertake to supply articles of daily use to them at reasonable rates, provided that they bind themselves to the following among other terms by executing formal written agreements :—

(*a*) Not to enter into any credit transactions with the hillmen or to lend them money.

(*b*) Not to sell any intoxicating liquors or drugs to them.

(*c*) Not to quarrel with or illtreat the hillmen.

(*d*) Not to buy grain or other articles the sale or removal of which is prohibited by the preceding Rules or by the Forest Regulation and Rules already in force or that may hereafter come into force, and

(*e*) To keep proper and clear accounts of all their transactions with the hillmen, which accounts shall be open for inspection by the respective Range Officer or Divisional Forest Officer.

(ii) Licences shall be liable to be revoked, withdrawn or cancelled for breach of any of the conditions of the agreement, the trader being rendered liable besides to the penalties prescribed therein.

(iii) Such licensed traders shall acquire notitle whatever to lands occupied or cultivated by the hillmen under these Rules.

14. (Able-bodied adult male alone shall be requisitioned for work for the Forest Department) at prescribed rates of wages, such rates being fixed by the Divisional Forest Officer with the previous sanction of the Conservator, for three years at a time, calculated with reference to the wages paid during the preceding three years and the current market rates.

15. The hillmen shall not set fire to the Forests and they shall take all possible care and precaution to prevent fires occurring in the Government Forests and Reserves. They shall assist the Forest Officers in preventing the occurrence or commission of offences, and the occurrence of fires and in extinguishing such fires.

16. All hillmen shall assist the Police, Revenue or other officers of the Government in preventing crimes, or in detecting offenders who may have sought shelter or refuge in the Government Forest or Reserves.

17. Hillmen shall not harbour or allow to remain in their settlements, any low land criminals or persons likely to commit any breaches of the forest or other laws of the country, nor shall they take into partnership any outsiders, in their cultivations within the Government Forests or Reserves or in their hunting or shooting excursions.

17. (*a*) Hillmen shall not cultivate ganja plants (Cannabis sativa) in any of their settlements, and shall root out and destroy all such plants wherever they find them in the Governments Forests and Reserves.

18. They shall be further, bound to deliver to the Forest Department any ivory,elephant teeth, cardamoms wax, dammer and laccollected by them, as well as honey or any other forest produce which they may be called upon to collect and deliver to the Forest Department in return for which they will be paid at the rates fixed in the following schedule :—

Number and produce.	*Rates.*
1 Ivory	1st class (weighing 18 lbs. and above per tusk) 7 fs. per lb.
Ivory	2nd class (weighing below 18 lbs. but above 13 lbs. per tusk) 5¼ fs. per lb.
Ivory	3rd class (weighing below 13 lbs. but above 7 lbs. per tusk) 3½ fs. per lb.
Ivory	4th class (weighing below 7 lbs.) 1¾ fs. per lb.
2. Cardamom	With husk, 35 fs. per Thulam.
Cardamom	Seeds 26 fs. 3 chs. 4 c. per Thulam.
Cardamom	Chaff with husk 6 fs. per Thulam.
3. Wax	45 fs. per Thulam.
4. Dammer	6 fs. per Thulam.
5. Honey	17½ fs. per parah.

For articles for which rates are not prescribed in the above schedule, the hillmen will be paid an amount not exceeding one-half of the sale proceeds of such article with the sanction of the Conservator of Forests.

19. Any hillman found to wilfully violate, or set in contravention of these Rules o to the Forest Regulation and Rules, shall be liable to be expelled from his settlement in a Government Forest on Reserve, temporarily or permanently with previous sanction of the Government of Forest besides being subjected to the penalties prescribed in the Forest Law.

APPENDIX-IX.

MAPS.

The importance of maps cannot be over emphasised. Tirunelveli South Division is woefully lacking in this aspect. For the forests in Kanyakumari district except S.I. sheets in 1"=1 mile scale, *no other map is available*. So one is not sure of the boundaries of the reserved forests and the enclosures within. *Plantations have not been marked* in any large scale map. *In the absence of even proper surveyed sketches one has to grope in the dark even to locate them.* The areas occupied by private holdings, leases, electricity board etc. are not known for sure. So the S. I. sheets of 1"=1 mile scale were enlarged to 4"=1 mile scale and with maximum effort the above features have been marked in one set of maps. With this map as basis the various Working Circle maps have been prepared. But it is admitted that these maps are not accurate. They help at the most to locate the various features like plantations, coupes, land holdings, lease areas etc. but cannot vouchsafe for the accuracy of their boundaries or extent.

In the case of forests in Tirunelveli district where maps in scale 4"=1 mile or 1 cm=15,000 cms. are available the changes in boundaries and consequently in their extent by way of addition or dis-reservation have not been marked with the result there is no uptodate map showing the present position of even important forests like Kalakad and Kudiraimozhi Teri. Further, plantations raised under plan prescription and outside plan prescription have not been marked in most of the cases. Even posting of fuel coupes worked has not been done correctly. So sincere efforts have been made to prepare map for each Reserved Forest and Ex-Zamin Forest and post the details. Based on such maps further preparation of working circle map has been done. Here also the accuracy cannot be vouchsafed.

The following maps have been prepared for this Working Plan and are appended.—

Detailed Maps :

Teak Working Circle :

Kulasekaram Series ..	.. 4"=1 mile	1 map
Azhagiapandiapuram Series	4"=1 mile	1 map

Softwood Working Circle :

Kulasekaram Series	.. 4"=1 mile	1 map
Azhagiapandiapuram Series	4"=1 mile	1 map

Fuel Working Circle :

Vadagarai series Kalakad series	To be worked	Kalakad Therku-veeravanallur and Vallioor Reserved Forests.	4"=1 mile one set sheets I to VI.
Parivarisurian series Nambikoil series Tirukarangudi series. Myladipudur series Padmaneri series	Given rest		

Panagudi series	To be worked	..	4"=1 mile,1 map.
Aramboly series ..	Given rest		
Kilmanimuthar series. ..	To be worked.	..	4"=1 mile,1 map.

NOTE.—Vallanad series and Kolundumamalai series. | Given rest indicated on Reafforestation Working Circle Map.

Reafforestation Working Circle :

Tirunelveli Series :

Vellioor Reserved Forest	4"=1 mile	1 map.
Kolundumamalai Reserved Forest	4"=1 mile	1 map.
Manpothai Reserved Forest	4"=1 mile	1 map.
Vallanad Reserved Forest	4"=1 mile	1 map.
Chalikulam Ex. Zamin Forest	4"=1 mile	1 map.
Kurumalai Ex. Zamin Forest	4"=1 mile	1 map.
Cangaikondan Reserved Forest	8"=1 mile	1 map.
Melapattam Reserved Forest	8"=1 mile	1 map.

Teri Forest Regeneration Working Circle.

Kachanavilai series Kanam Series Kayamozhi series Nazareth series	Kudiraimozhi Teri Reserved Forest	4"=1 mile	One set sheets I and II.
Sathankulam series in Sathankulam Reserved Land.		4"=1 mile	1 map.

Bamboo Working Circle :

Kulasekaram series	1"=1 mile	1 map.

Miscellaneous Regulations :

Klamalai, Veerapuli Reserved Forests,—Pechiparai Grazing Blocks and Thudalikad—Reserved Land.	4"=1 mile	One set sheets I to V.
Location of Kani Settlements in Kanniyakumari District.	1"=1 mile	1 map.
Kaliavoor Reserved Forest	16"=1 mile	1 map.
Farm Forestry	1"=4 miles	1 map.

River Fringe and Canal Bank Plantations :

Tambaraparani series	1"=1 mile	1 map.
Manimuthar series	1"=1 mile	1 map.

Sea Coast Plantations :

Kovalam Coastal Plantations	1 cm.=40 metres	1 map.
Nature Reserve	1"=1 mile	1 map.

Range Management Maps :

Tirunelveli Range	1"=1 mile	1 map.
Nanguneri Range	1"=1 mile	1 map
Kulasekaram Range	1"=1 mile	1 map.
Azhagiapandiapuram Range	1"=1 mile	1 map.
Boothapandi Range	1"=1 mile	1 map.

Forest Types Map for the Division :

Kanniyakumari District	1"=2 miles	1 map.
Tirunelveli District (Part)	1"=4 miles	1 map.
Key Map for the Division	1"=4 miles	1 map.

Other Miscellaneous Maps :

Reserve Forest Maps—Tirunelveli District :

Thalayuthu Reserved Forest	1 : 15,000	1 map
Muthur Reserved Forest	8"=1 mile	1 map
Sivalaperi Reserved Forest	1 : 15,000	1 map.
Punnayadi Island, Hare Island and Mullakad Reserved Forests.	2"=1 mile	1 map.
Singampatty Ex-Zamin Forest	4"=1 mile	1 map.
Karadikulam Ex. Zamin Forest	4"=1 mile	1 map.

Reserve Forest Maps—Kanniyakumari District :

Poigaimalai Reserved Forest	4"=1 mile	1 map.
Thadakamalai Reserved Forest	4"=1 mile	1 map.
Kalkulam Grazing Block I	16"=1 mile	1 map.
Kalkulam Grazing Block II	16"=1 mile	1 map.
Pechiparai Grazing Blocks I (*a*) and I (*b*)	16"=1 mile	1 map.
Asambu Proposed Reserved Foregst	4="1 mile	1 map.
Kottakarai Reserved Land	16"=1 mile	1 map.

Copy of :

PROCEEDINGS OF THE CHIEF CONSERVATOR OF FORESTS.

*Proceedings No. W*3/17565/79, *dated* 18*th May* 1979.

Subject. :—Working Plan—Tirunelveli South Division—Prepared by Thiru Y. S. Kadakshamani I.F.S., Working Plan Officer, Madurai—Sanctioned.

THIRU K. A. BHOJA SHETTY, I.F.S.,
Chief Conservator of Forests (*Development*).

The Working Plan for Tirunelveli South Division, prepared by Thiru Y. S. Kadakshmani, I.F.S., Forest Working Plan Officer, Madurai for the period of 1st April 1976 to 31st March 1986 is sanctioned.

K. A. BHOJA SHETTY,
Chief Conservator of Forests (*Development*)